

Making Waves

The Fair Isle Marine Environment and Tourism Initiative

NEWSLETTER 7: February 2010

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For centuries Fair Islanders have looked after their resources - not for any altruistic reason, but because they had no other option. Greater mobility and changes in marine legislation in the 20th century meant that others now had access to a resource which had previously been largely for local use. The new user groups were free from the constraints of safeguarding stock for future use, because for them Fair Isle waters were only part of a wider resource. The islanders could no longer compete and the 20th century saw a wholesale and difficult shift from a subsistence economy with fishing at its heart, to a more mixed economy. What has not changed, however, is that the new economy still relies strongly on our ties with the sea. From traditional Shetland *yoal* boat-building to the tourist trade, the key element for those earning a living on the isle remains a healthy marine environment and maintenance of the marine resource.

The Fair Isle community is very concerned that we are effectively excluded from having a say in the control and management of our marine resource – a resource which has sustained us for centuries and which remains at the heart of our economic and social life. The Fair Isle community recognises the imperative need to safeguard our resources, terrestrial and marine, for future generations. Our concerns are social and economic as much as environmental. A healthy, pristine environment is an essential ingredient for our future well-being.

Photograph on front cover.

Fair Isle Wildlife Club pond-dipping at Muckle Uri Geo, December 2009.

Photographer N.J. Riddiford

FIMETI logo by Fiona Mitchell.

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Twenty years...taking stock

It was at a Fair Isle quarterly meeting in September 1989 that the late Alec Stout of Barkland commented: “shouldn’t we be doing something about our marine environment”. Although it had not been included on the agenda it struck a chord amongst all those present. The isle had just witnessed a summer of starving kittiwakes dead and dying on the sea and beaches, a plethora of fishing boats chasing fewer and fewer sandeels, lobsters and fish in shorter supply... “Yes, something should be done” was the meeting’s response. Alec sowed the seed for a community effort which eventually led, in 1995, to the Fair Isle Marine Environment and Tourism Initiative (FIMETI). The name was chosen to reflect an issue of over-riding importance for the community: a rich and healthy Fair Isle marine environment is an essential requisite for the social and economic viability of the isle. While crofting, knitwear, crafts and other traditional skills remain at the heart of our way of life, by the late 20th Century tourism had become a key factor in the well-being of the isle; and the major resources which brought in visitors were Fair Isle’s high quality environmental and cultural values – values intrinsically linked with the sea.

No end of effort has been spent raising awareness over the twenty years. A lot of people have put in a lot of time notifying our aspirations for sustainable management of our marine resource. Newsletters, reports, our blueprint for sustainable management (entitled *Safeguarding Our Heritage*), a series of booklets, involvement in sustainable resource management measures with small communities from north Norway and Swedish Lapland, engagement with other “stakeholders” in Shetland and with Scottish government programmes and consultations, contributions towards local marine spatial plans and a draft *Fair Isle Marine Action Plan* – which is our most recent contribution.

Considering the amount of time and commitment given by the community and its partners, Fair Isle Bird Observatory (FIBO) and the National Trust for Scotland (NTS), it seems appropriate after 20 years to take stock. The measure of how much we have achieved – or, put another way, how much our efforts have been taken seriously by decision-making authorities – can be gauged from the series of objectives set by FIMETI at the outset. These were formalised in *Safeguarding Our Heritage* as a series of actions:

- Liaise with and inform users of the community's aspirations for sustainable management procedures to be enacted in Fair Isle waters.
- Liaise with statutory, national and international bodies to gain recognition and support for community empowerment in achieving a more integrated approach to managing Fair Isle's surrounding marine environment.
- Inform conservation and management for values which have not been summarised or described in depth (such as aspects of cultural heritage).
- Draw up a prescriptive management plan which addresses the required conservation objectives.
- Establish a marine protected area supported by a framework of sustainable management measures.

As outlined above, FIMETI has done everything in its limited powers to address the first four actions. Unfortunately, the final action relies on the sympathetic support and cooperation of regional and national agencies, organisations and government. There remain glimmers of hope on the horizon. The coastal and marine national park initiative of the former Scottish government is no longer on the agenda; but a Scottish Marine Bill has now been passed which recognises the need for marine protected areas around Scotland. The same call is going out internationally, and enshrined in legislation from wider bodies such as the European Union. However, there currently seems to be a very narrow attitude to what "qualifies" for MPA - embodied purely in marine nature conservation interest. Fair Isle of course has high marine nature conservation interest but we are told that whatever the qualifier – seabirds, underwater cliffs and caves – there is always a better site in Scotland. This misses a number of points, including the danger of including only one protected site for a specific habitat – that's like expecting the Dartford warbler or sand lizard to survive by protecting just one piece of UK heathland.

The most important factor to have been missed is the human element. Fair Isle brings with it a host of cultural and environmental values intimately reliant on a healthy, well managed marine resource; and a resident community which understands this. It is now widely recognised that Marine Protected Areas are both necessary and inevitable. But to cross that first hurdle it will need support across society and most importantly amongst those living with and alongside the resource. What better starting point than Fair Isle where there is universal support from the community for a marine protected area? And let's not forget the skills and facilities the isle offers: islander knowledge, boat skills, the research bases of Fair Isle Bird Observatory and the Fair Isle Weather Station. What better place to trial elements called for in the new Marine Bill including monitoring, research and a series of measures which embrace sustainable management?

This is the message we have to get across if we are to make any further progress. We need to get people generally, and decision-makers especially, to take a much more holistic view of marine conservation and to understand the relationship between a sustainably managed resource and local human benefits. If a network of marine sites is established around Scotland and beyond it needs to go beyond just protecting rare species or "best" sites to include *representative* areas; and "representative" includes those sites where the local community is *socially and culturally reliant on an healthy, fully functioning marine ecosystem* around its shores.

Decision-makers, legislators, influential NGOs - this message is going to you. Please take a moment to think about it. The Fair Isle community has engaged politely but vigorously for twenty years. We can go no further without your engagement. Where is your response? Don't leave us socially excluded.

NEWS

Marine Environment

Fair Isle Marine Spatial Plan

As reported in the last newsletter, the isle signed up through FIMETI to help prepare a draft Fair Isle Marine Spatial Plan in conjunction with North Atlantic Fisheries College Marine Centre post-graduate, Dave Denoon. This was part of the remit of the Scottish Government's *Scottish Sustainable Marine Environment Initiative (SSMEI)* Shetland pilot study. As the work progressed, SSMEI took the decision to extend the plan to incorporate other outer islands of Shetland in a renamed Small Islands Spatial Plan. FIMETI provided a considerable amount of detailed information in a very short time which required further work to streamline it into a final document. Unfortunately, a number of circumstances led to the shelving of this plan while it was at that stage. This was a great disappointment to the team of eleven Fair Islanders who had worked long and hard to help with the construction of the plan. It should be noted that Fair Islanders predicted that extending the plan to beyond just Fair Isle would present particular difficulties, not least because each island will have its own often widely different issues and circumstances.

Fair Isle Marine Action Plan

One of the circumstances was the absence of SSMEI Shetland pilot manager, Lorraine Gray on maternity leave. On her return, Dr Gray suggested that the Fair Isle team put together a Fair Isle Marine Action Plan (FIMAP) instead. The team worked during the summer to come up with a draft plan of 20 actions for the marine environment. The draft FIMAP is drawn fully from the Fair Isle contribution to the Small Islands Marine Spatial Plan and is basically a summary of the issues outlined in that contribution, spelt out within a clearly stated logical framework. The production of a Marine Action Plan will ensure that the work of the FIMETI team will not be lost from view. The structure of the FIMAP, and its list of actions is given in Appendix 1. The draft plan is available in full on the SSMEI Shetland website, at: <http://www.nafc.ac.uk/SSMEI.aspx>.

Fair Isle's Special Protection Area for Birds

The other piece of news concerns an extension to Fair Isle's Special Protection Area for Birds (SPA). The Fair Isle Marine Environment Initiative (FIMETI) and the NTS responded to a consultation by Scottish Natural Heritage (SNH) in which both parties pointed out that the Fair Isle SPA was currently failing its conservation objective of maintaining and enhancing internationally important seabird populations because only the breeding sites were protected and not the feeding areas. It is the lack of food for the chicks rather than any terrestrial problem which has led to the series of recent poor to disastrous breeding seasons for Fair Isle seabirds. These points appear to have been received favourably as in September 2009, SNH announced that the Scottish government had designated a seaward extension of "approximately 2 km into the marine environment to include seabed, water column and surface".

The Fair Isle community welcomes this decision but notes that no management measures have been outlined to support this re-designation, though we are informed that the seabirds “*will benefit from protection against activities that would cause significant disturbance and will safeguard their marine habitat*”. The SPA extension comes at a time when the Scottish Government has launched a Marine Bill. The isle can only hope that these two events will enhance the call by the community, supported by resolutions in repeated Council of Europe Diploma renewals, for a marine protection area around the isle; and that the Fair Isle Marine Action Plan will act as a catalyst and template for the suite of sustainable management measures needed to accompany this.

[SSMEI \(Shetland pilot study\)](#)

Fiona Mitchell and Nick Riddiford shared the responsibility of representing Fair Isle at SSMEI steering group meetings at North Atlantic Fisheries College, Shetland during the year. Members of FIMETI also responded with detailed comments on the draft Strategic Environment Assessment (SEA) conducted on the Shetland Marine Spatial Plan. In the autumn, FIMETI was informed that there would be an extension of the pilot study for a further two years. One of the items proposed for this extension was a “feasibility study to take forward the Fair Isle Marine Action Plan”. This proposal is included in the Delivery Plan section of the draft Shetland Marine Spatial Plan. This latest draft of the plan also makes reference to the Fair Isle Marine Action Plan, and the need to engage communities: in the words of the plan “*Every community in Shetland will be asked to define their aspirations for the locality*”. The Fair Isle community welcomes this recognition. It also welcomes the feasibility study and will participate fully through FIMETI. Some NTS funding has been made available for the FIMETI coordinator to further the Marine Action Plan and to maintain Fair Isle’s profile as a site for taking forward sustainable management programmes for the marine resource.

[Scottish Marine Bill](#)

FIMETI has been active in ensuring that the voice of small communities is heard through engagement with Scottish LINK, the body representing all the environment organisations in Scotland. Support for Scottish LINK’s briefings to parliament has come from other Scottish communities and organisations as well as the environmental ones.

The Scottish Marine Bill was passed with full support from all political parties on Thursday, 4th February 2010. A study of the “key facts” of this legislation outlined on the Scottish Government website reveals that Fair Isle meets a whole range of criteria magnificently which should qualify it for special attention. The key elements as they relate to Fair Isle are highlighted in italics below.

“Key facts

- Improved protection for nature conservation based on the 3 pillar approach - species conservation, site protection and *wider seas measures*.
- New powers to select and manage Marine Protected Areas (MPAs) for the *protection and enhancement of marine biodiversity* and for the *preservation of marine historic assets of national importance*.
- Powers to select marine sites to *research into new and sustainable methods of using marine resources*.
- Sites will be designated using science, but *social and economic factors will be considered* in the management of the sites.

- Provision for *communities to recommend MPAs* through their involvement in Marine Planning Partnerships.
- A power in the Marine Bill for the national marine plan to include marine ecosystems objectives *along with economic and social objectives*.

MPAs will form part of a network of sites in the marine environment that will also include marine elements of the [Natura network](#), [Ramsar sites](#), and [Sites of Specific Scientific Interest](#).”

Fair Isle is in the Natura network, as an SPA and SAC; much of the isle, including the coastal fringe is also an SSSI.

This landmark legislation will hopefully herald a new era of sustainable management which will safeguard Scotland’s enormously rich marine resource, of which Fair Isle is an outstanding example.

[The Marine Bill and Fair Isle – How you can help](#)

We have always struggled to get our voice heard but there is an opportunity to help us change that. The Marine Conservation Society (MCS) is running a campaign entitled *Your Seas Your Voice* in which it invites people to “influence delivery of the new Act – by the identification and designation of a network of Marine Protected Areas”. By visiting the MCS website www.mcsuk.org you can nominate a site, either from 73 specially selected MCS sites (which shamefully does not include Fair Isle nor any site in the Northern Isles!) or by choosing your own. By nominating Fair Isle you will be raising our profile and making a contribution to the community’s efforts to see Fair Isle waters brought back to sustainable management. That contribution can be huge if enough people take up this challenge.

[FIMETI](#)

Fair Isle Marine Environment and Tourism Initiative now has its own website, at www.fimeti.org.uk.

Wildlife

[Fair Isle seabirds: 2008 results and long-term population trends](#) (*compiled by Deryk Shaw, FIBO*)

[*editorial note*: one of the strengths of Fair Isle is its role in monitoring the health of the sea through its seabird research. In 2008, Fair Isle Bird Observatory reached the milestone of 40 years of monitoring its breeding seabirds as part of the UK Seabird Monitoring Scheme. Warden, Deryk Shaw, has marked the occasion with a review of population trends during that period, first published in the *Fair Isle Times*. We are grateful to Deryk and the Bird Observatory for permission to repeat it for readers not already familiar with the analysis. It is most telling! We also gratefully acknowledge the JNCC, administrators of the UK Seabird Monitoring Scheme.]

The summer of 2008 marked the worst breeding season on record! With few exceptions (great skua and northern gannet) breeding numbers were very low and several species failed to produce a single chick to fledging. Lesser sandeels *Ammodytes marinus* were still in very short supply but in contrast to recent years snake pipefish *Entelurus aequoreus* too were scarce.

Northern Fulmar *Fulmarus glacialis*: Numbers of AOS on the monitoring plots showed a small (7.9%) increase on 2007's low figure. Productivity was similar to last year with a final figure of 0.38 being somewhat below the long-term mean.

Northern Gannet *Sula bassana*: The breeding population continues to rise, reaching a new record of 2488 AON – a large 27.1% increase since 2007. Increases were noted at all sub-colonies, including the last year's new colony at Lerness, which almost doubled to 108 AON and Sheep Rock, up from 50 to 63 AON. Breeding success looks to be characteristically high, although there were some losses during 'the Fair Isle Monsoon' on 10th August!

European Shag *Phalacrocorax aristotelis*: The almost complete failure to fledge young by this species is perhaps the most surprising result of all. There appears to have been extensive non-breeding this year with only 32 AON on the productivity plot (previous lowest was 51 in 2006), most of which were abandoned either before eggs were even laid or during incubation. Only three nests hatched young and just a single chick fledged (0.03 productivity). Numbers at the annual population monitoring plots were also much reduced, dropping by 58% overall since last year, whilst a whole island census produced just 235 AON – a massive 67.8% reduction on the last count, in 2003 (Fig 1).

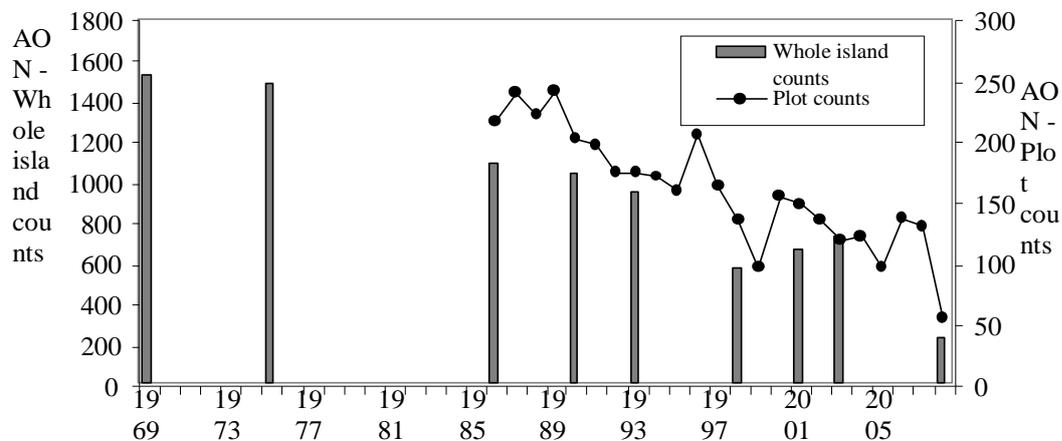


Figure 1 - Whole island counts and plot counts of European Shag on Fair Isle, 1969 – 2008

Plot counts are the sum of five study plots. Note that the 1990 and subsequent whole island counts are inclusive of trace nests – earlier counts are exclusive of these.

Great Skua *Stercorarius skua*: Numbers of AOT increased for the third consecutive year – up from 224 in 2007 to 294 (+31.25%) this year to a new record high (Fig 2). The vast majority laid eggs but only 114 chicks managed to fledge. A productivity of 0.39 is very low (Fig 3) but given the troubles other species were having it is quite satisfactory. A sample of 93 nests was monitored more closely; 79 (84.9%) hatched, 22 fledged one chick, 8 fledged two chicks – a sample productivity of 0.41

Arctic Skua *Stercorarius parasiticus*: This species has been in trouble since 1998 with falling numbers and very low breeding success. The years 2003 – 2005 saw a total of just ten birds fledge. Things improved dramatically in 2006 with the highest number of AOT (105) since the early 1990s and good productivity (0.82). In 2007 however, the situation deteriorated once again and from 68 AOT (a 35.2% decrease), not a single chick fledged. Numbers fell even further this year to just 37 AOT (Fig 2). Only 17 of these managed to lay eggs but most (12) failed within a week and the remainder by a week later (Fig 3) – mainly due to predation from bonxies (great skuas).

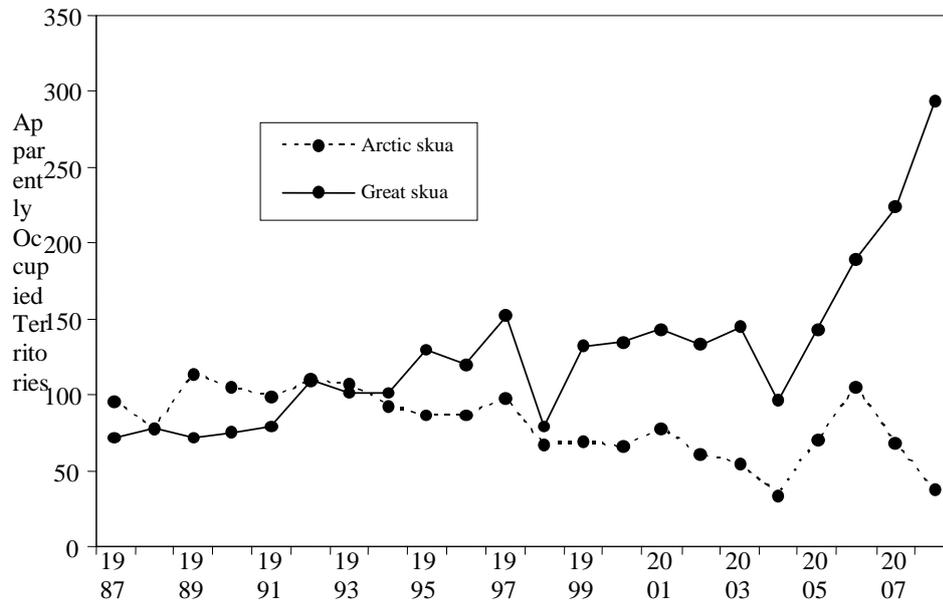


Figure 2 - Whole island counts of Arctic Skua and Great Skua on Fair Isle, 1987-2008.

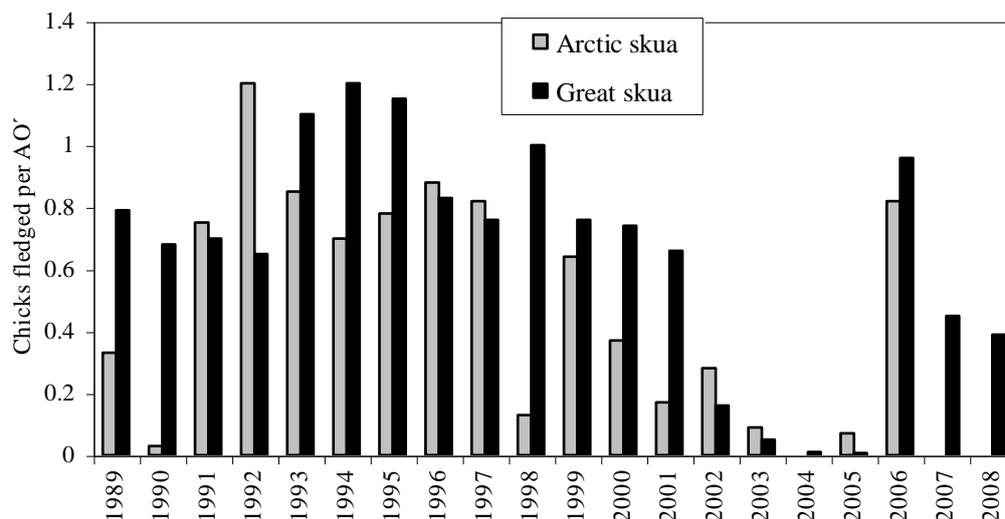


Figure 3 - Breeding success of Arctic and Great Skuas on Fair Isle, 1989-2008.

Note: Arctic Skua failed to fledge any young in 2004, 2007 & 2008

Black-legged Kittiwake *Rissa tridactyla*: The species in most trouble! In 1988, a whole island census estimated the breeding population at 19,340 AON. Twenty years later, only 14% of this number remain (2688 AON) (Fig 4). Mirroring this, numbers of AON at the monitoring plots continue to fall (by 44.1% since 2007) to the lowest ever – only 10% of the number in 1987 (Fig 4). Although, as last year, the vast majority of nests produced eggs (137 out of 142), only 19 of these hatched and all chicks died before they were 10 days old – mainly from predation by gulls and skuas.

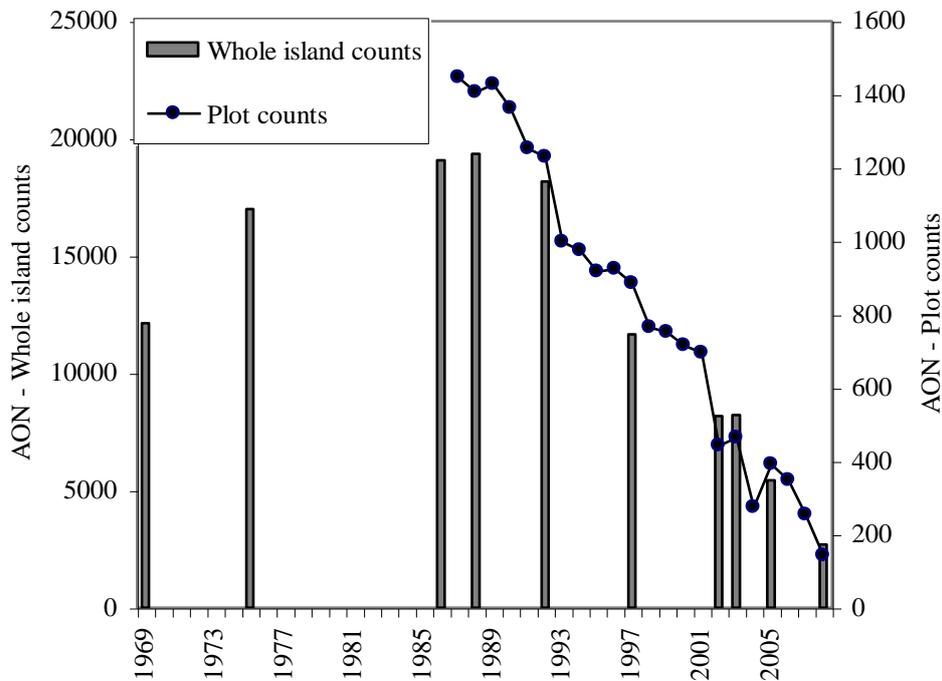


Figure 4 - Whole island and plot counts of Black-legged kittiwake nests on Fair Isle, 1969-2008.

Arctic Tern *Sterna paradisaea*: In 2006, after five consecutive years of failure to fledge any chicks and with numbers of nesting birds dwindling each year, it was a surprise to record over 800 AIA and even more surprise that over 300 chicks fledged – a productivity of 0.39. We therefore waited with baited breath to see what would happen in 2007. Around 150 birds arrived in mid-May but all departed a week later. Birds returned in late May and an estimated 208 AIA were counted in two colonies – on Bunes and at South Light. However, only a handful of eggs managed to hatch (the chicks of which died shortly after) before the whole colony was deserted for good. A similar pattern evolved in 2008 with c400 birds prospecting in mid-May but all had departed by the end of the month and did not return – the first time no nesting has taken place since monitoring began in 1987.

Common Guillemot *Uria aalge*: Numbers on the monitoring plots dropped (by 31.4% compared to 2007) to a new low and were below 1,000 for the first time on record – a massive 70% reduction in numbers since 1987 when monitoring began. Only a small number of eggs were laid on the productivity plots and with few birds present to defend them, eggs gradually disappeared as gulls and skuas helped themselves. From 92 eggs laid, only two hatched chicks, neither of which lasted more than two days. As in 2004, no birds are thought to have fledged from the entire island and all colonies were deserted by the end of June.

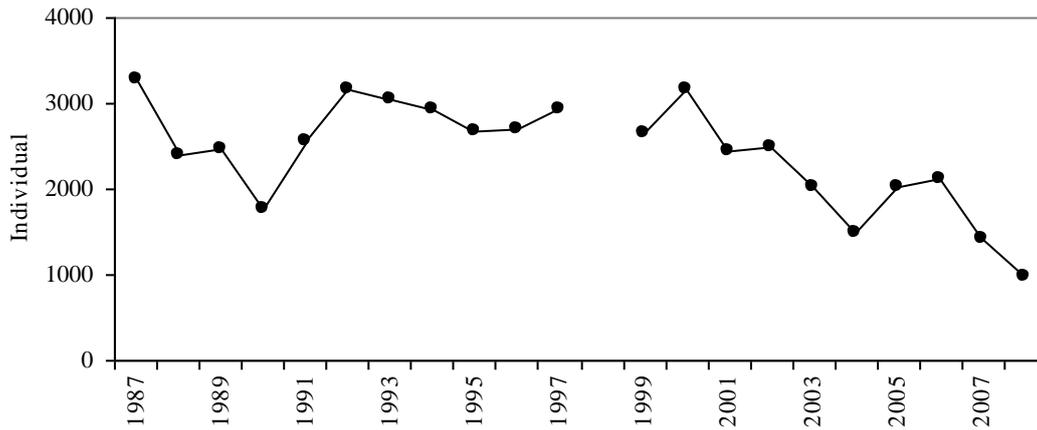


Figure 5 - Plot counts of Common Guillemots on Fair Isle, 1987-2008.
Counts shown are the sum of five study plots.

Razorbill *Alca torda*: The ten years (1994-2003) saw a mean productivity at the Easter Lother monitoring plot of 0.60. However in 2004, productivity was **zero** for the first time ever and despite record numbers of eggs being laid, fledging success has been poor each year since (0.44 in 2005, 0.23 in 2006, zero in 2007). Fewer eggs were laid this year (78 compared to 94 last year) but as in 2007, only half of these hatched and only three (from 39) chicks survived longer than a week. None fledged - the third complete failure in the last five years! (Fig 6).

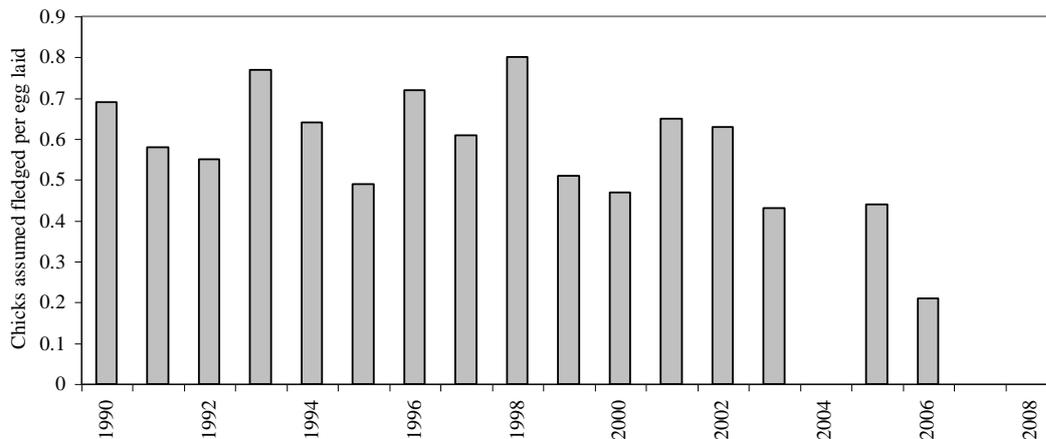


Figure 6 - Breeding success of Razorbill at Easter Lother, Fair Isle, 1990-2008.

Atlantic Puffin *Fratercula arctica*: In 2008, almost a third of marked burrows with eggs in mid-May had failed by the next visit in early July. An estimated final productivity of 0.40, although much improved on the 2007 figure (0.17) is the third lowest on record. Mean productivity in the last ten years (1999 – 2008) is 0.53 compared to the previous ten years (1989 – 1998) of 0.74. The 2008 figure may even be an over-estimate as record-breaking torrential rain on 10th August must have flooded almost all of the burrows. Indeed many fledged birds were found around the isle – birds that may have not been quite ready to leave yet and certainly wouldn't have chosen that night to go!

Food samples collected were split almost equally between very small rockling *Gaidropsarus vulgaris* and 0-group lesser sandeels, with a few gadoids thrown in. Individual sandeel lengths were very small and sample weights were the lowest on record (Fig 7). In contrast to recent

years there were no snake pipefish collected, although a few were observed during the 24-hour feeding watch at Roskilie, where over half (57.9%) of feeds were small rockling and 35% were lesser sandeels.

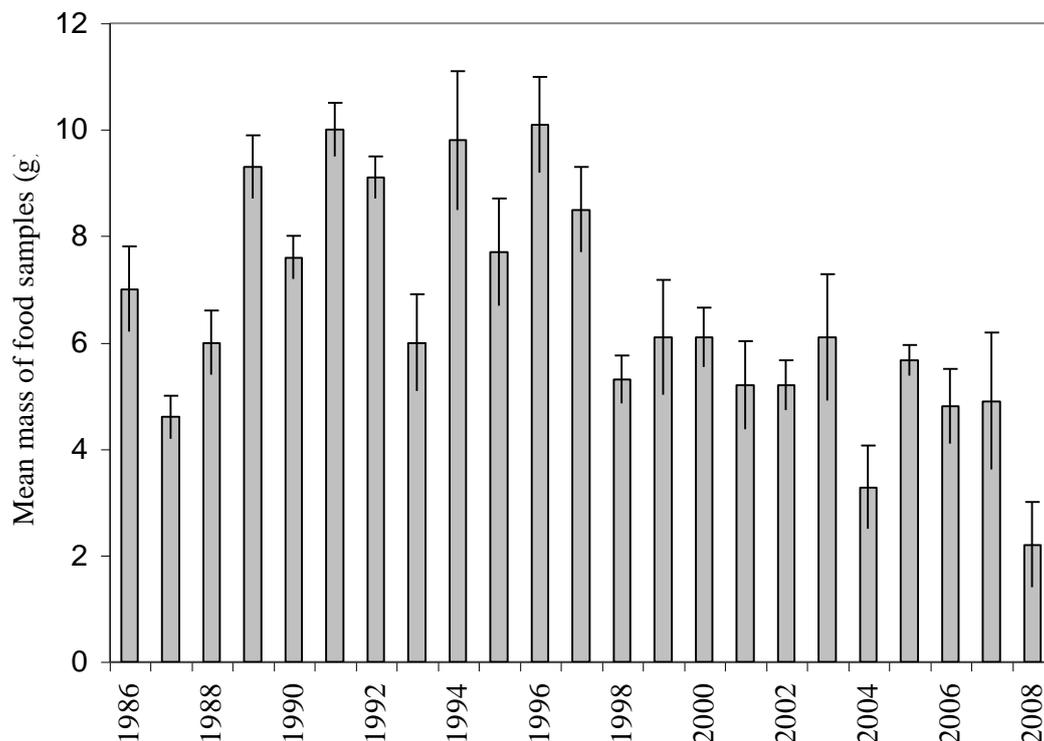


Figure 7 - Mean mass of food samples of Atlantic Puffin on Fair Isle, 1986-2008.
Error bars represent standard error of the mean.

Note: AON = Apparently Occupied Nest. AOS = Apparently Occupied Site AOT= Apparently Occupied Territory. Productivity = Number of chicks fledged per nesting attempt.

[Seabird trends in 2009](#)

It was a much improved breeding season in 2009 overall. However, breeding success remained well below the long-term average.

The most notable success was the total of 70 Arctic tern *Sterna paradisaea* chicks fledged, only the second time in ten years that fledging has occurred. There were increases in breeding numbers of gannet *Sula bassana*, fulmar *Fulmarus glacialis*, Arctic skua *Stercorarius parasiticus* and kittiwake *Rissa tridactyla*. Razorbills *Alca torda* fledged chicks following two years of complete failure and guillemots *Uria aalge* also fledged young. On the debit side, the majority of the few Arctic skua chicks which fledged were then predated by great skuas; and the shag *Phalacrocorax aristotelis* breeding season was a disaster, with only a few pairs bothering to breed and few chicks fledged. Many seabirds are long lived and can sustain the occasional bad breeding season without ill effect on total population size. However, the effects of a long run of breeding season failures is beginning to make its mark on even the most resilient of species: whole island counts of puffins *Fratercula arctica* indicate a breeding population decline of 46% since 2001. The puffin is a flagship species for the isle. Virtually all our summer visitors want to see this species and it is thus a very important tourist asset for the isle. We cannot afford to lose it!

[Sea Mammals in 2008 and 2009](#)

The malaise experienced by many seabirds may also be extending to the sea mammals. It was two poor years generally for cetaceans. Just two sightings of killer whales *Orcinus orca* and one of a pod of 7 Risso's dolphins *Grampus griseus* made 2009 an even poorer year than 2008. It was a similar story for the Atlantic grey seal *Halichoerus grypus*. Even fewer pups were produced in 2008 and 2009 than in 2007 - already a poorer year than any other in recent years - thus continuing the downward trend; and the common seal *Phoca vitulina* which had become common in recent years was notably scarce in both years. These trends may be further indications of a severely stressed marine ecosystem.

[Fish in 2008 and 2009](#)

Abundance and trends

Monitoring of fish abundance by Stewart Thomson of Quoy suggested that there was some improvement in certain areas of the fishery in 2008, but in other areas the situation remained critical or had even deteriorated. Sand-eels *Ammodytes* were present at the beginning of the seabird breeding season but seemed to have disappeared by the time the seabird chicks were hatching. Saithe *Pollachius virens* occurrences proved unpredictable, with shoals in eastern and northern Fair Isle waters very hard and sometimes impossible to find and, when present, not in any appreciable numbers. Whiting *Merlangius merlangus* remained scarce and mackerel *Scomber scombrus* irregular and in small numbers.

The biggest improvement has been for the haddock *Melanogrammus aeglefinus*, as indicated by reasonable numbers of good quality fish. Compared with other recent years, 2008 was the first summer that commercial-sized fish exceeded juveniles, and they were in good condition. The haddock is a benthic species, feeding on bottom-dwelling invertebrates and will have benefited from the marked decline in bottom trawl activities as Fair Isle waters, stripped of their commercial-sized fish, become less and less attractive to fishing boats. Other evidence that the sea bottom is recovering is the re-occurrence of species like gurnard *Eutrigla gurnardus* and lesser spotted dogfish *Scyliorhinus canicula*.

Apparent improvements in 2008 were tempered by 2009 observations. Stewart reports that the summer was a disappointment with regards the inshore fish stocks. Even saithe *Pollachius virens*, the only species which has maintained reasonable stocks throughout recent fish shortages, was difficult to find from start to finish. The few fish caught were of good quality but were very scarce and could not be found at all on some of the traditional meads (fishing grounds). Similar comments can be made about the mackerel. They arrived late and were patchy in occurrence making it difficult to catch any number apart from on rare occasions. The haddock season began promisingly, with reasonable numbers of decent commercial-sized fish, but a fishing boat from Orkney cleaned up the inshore grounds, including a very good mark of small codling which were a long way from being of commercial size. A few good cod *Gadus morhua* and ling *Molva molva* were caught later on but poor autumn weather conditions curtailed the number of days small boats could put to sea. On occasions that fish were caught they were of good quality, averaging between 4 and 6 pounds (1.8 to 2.7 kg).

Despite these partial, somewhat irregular, signs of improvement, Stewart Thomson cautions against early celebrations. He comments "we are a long way from achieving the populations of fifty years ago and must not rest until we do." The fishery is still in deep trouble and needs protection.

Sand-eels

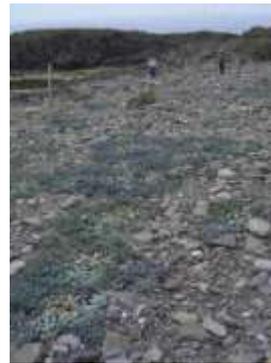
Information about the sand-eels *Ammodytes* came mainly from observations of chick provisioning by seabirds. This demonstrated that sand-eels were more abundant than in most recent years, including larger individuals, but were still in relatively short supply: for instance, in 2009, the proportion of sand-eels brought in by puffins was just 62% with the less nutritious rockling *Gaidropsarus vulgaris* and/or *Ciliata mustela* making up the other 38%.

Basking sharks

On a more positive note, the basking shark *Cetorhinus maximus* was recorded in both years. Individuals have now been recorded four years running in Fair Isle waters after a long absence. We are perhaps enjoying the benefits that international protection has afforded this species.

The Oysterplant Mertensia maritima colony

Photos left, middle and right: *Mertensia maritima* (oysterplant) colony at Muckle Uri Geo, Fair Isle. Copyright Pat Thomson.



This is becoming a wonderful conservation success story. Fair Isle Bird Observatory's measures to maintain a sheep-proof fence around the original oysterplant colony at Muckle Uri Geo continue. The results have been spectacular. By 2007 the number of tiny plantlets was so great that the only feasible way to monitor them was by estimate rather than direct counts. Count difficulties were further compounded by the tendency of individual plants to merge with their neighbour giving rise to large mats of several individuals. Counts were performed by counting the individual rosettes within these mats. There were fewer tiny rosettes in 2008 and 2009 but more of the medium size than previously. The counts were divided into small plants (comprising the plantlets and those plants less than 30 cm across), medium (between 30 and 50 cm length of "train") and large ("train" length more than 50 cm). Estimates were again made of small plants. Medium and large plants were counted individually but, because of the risks of over or under counting of individual plants growing in mats, counts were converted to the nearest round figure.

Despite the vulnerability of oysterplants to sheep grazing, plants continue to appear outside the enclosure. Thus, in 2008, a total of 283 plants - all of them small - was counted immediately outside the fenced area. Eight small plants had occupied Peerie Uri Geo, immediately to the east of the main colony and a further 31 in Sma Geo, the geo immediately east from Peerie Uri.

The total count for 2008 was 2892, including some 670 well established plants. This compares very favourably with the situation only two years previously when the total count was 196, 138 of them mature and 58 new recruits. There were only 8 outside the enclosure in 2006.

The total count in 2009 was 2635, 9% below 2008 totals. This is not considered a significant change as the counts are now mainly estimates because of the density of plants and the problems of counting them individually. The decrease may be an artifact of counter error in these difficult circumstances. In addition, the older plants are now well established and spreading and may be occupying space which would have previously been colonised by new plants. It is reasonable to assess the population at Muckle Uri Geo as remaining in a favourable condition.

The annual oysterplant *Mertensia maritima* population, as it stood in 2009, was as follows (Table 1):

Table 1. *Oysterplants at and around Muckle Uri Geo, Fair Isle, August 2009*

	Small	Medium	Large	TOTALS
Within MUG enclosure	1500*	500	200	2200
Outside fence, S side	18			18
Outside fence, E side	75			75
Outside fence, N side	146			146
Outside fence, W	181			181
Peerie Uri Geo	7			7
Sma Geo	6	2		8
TOTALS	1933	502	200	2635

KEY

MUG = Muckle Uri Geo

Small = tiny to small rosettes, no flowers

Medium = one or two “trains” of flowers (usually 30-50 cm extent of train)

Large = 50+ cm diameter rosettes with flower trains in all directions like spokes of wheel.

*large clusters of tiny plants estimated rather than direct count.

Note: a train was defined as the length of the longest stem (or “train”) emerging from the central rosette

Fair Isle Wildlife Club

The Fair Isle Wildlife Club (FIWC) continues to engage people of all ages in appreciating and learning about their environment, marine and terrestrial. Though originally set up for the community it has always been open to all and the make up of the groups is often international. Two-thirds of the participants are normally from the isle but in summer particularly the group is much more cosmopolitan, including in 2009 a “workcamp special” for the NTS Thistle Camp. Activities were as varied as ever in both years and included visits to the shore at different times of year to study the life of rock pools, the seashore and tideline, between the tides, seaweeds, plankton and jellyfish, etc. Reports of the visits are posted on the Fair Isle website www.fairisle.org.uk.

Equipment grant: The National Trust for Scotland



Photos left & middle: Members of Fair Isle Wildlife Club pond-dipping at Muckle Uri Geo, December 2009.
Photo right: specimens collected from Muckle Uri Geo. Photos Copyright Naomi Riddiford.

One of the great additions in 2009 has been the purchase of a series of long-handled pond-dipping nets. This was achieved by means of a generous grant from the NTS through their Concordat with Scottish Natural Heritage to obtain equipment for the Wildlife Club. We are extremely grateful to both organisations. A range of net sizes was obtained, including smaller lighter nets designed especially for the youngest participants. Further equipment is being purchased under the same grant for use in 2010.

Our thanks to Meiji

Fair Isle Wildlife Club excursions to the shore have revealed a fascinating world from the shore crabs *Carcinus maenas* and small fish, so addictive to children, to minuscule creatures only fully appreciated through high magnification. In order to share in these marvels, participants have had to stand patiently in line waiting their turn to peer through a microscope. We are pleased to announce that this will be a thing of the past. Thanks to a very generous gesture from Meiji Techno, FIWC/FIMETI now has at its disposal a state-of-the art microscope camera which not only takes still photographs of minute creatures but can be set up to feed live pictures through to a computer. This means that minuscule marine fauna and flora can be viewed directly by all, just by gathering round a computer. It will open up a new world. Meiji Techno is a great supporter of conservation programmes and provided the camera at a huge discount – in effect, sponsoring environmental education on the isle. It has taken us (Elizabeth and Nick Riddiford) a little while to master the workings of the camera but we now feel confident with it and look forward to putting it into action in 2010. Meanwhile here are a few of our early attempts at microphotography.

Photo, left: The epiphytic seaweed *Sphacelaria* on *Corallina officinalis*.
Copyright N.J.Riddiford.

Photo, right: Feeding mechanism of barnacle, top lit. Copyright N.J. Riddiford.



We are very pleased to acknowledge the generosity of Meiji Techno and the informed, thoughtful advice of its staff. Meiji Techno supplies a wide range of high quality material for exploring the microscopic world further. If anyone else is tempted, details of its products can be found at www.meijitechno.co.uk.

Climate change

Wildlife indicators

Populations of a whole suite of insects, and other fauna and flora, are extended their range northwards during this period of accelerating climate change and some are making it as far north as Fair Isle. This expansion is not confined to terrestrial species. The rare small cushion star *Asterina phylactica* was previously known only as far north as the Inner Hebrides, so the discovery of one near South Light by Henry Hyndman in April 2009 is a significant extension northwards.



Henry Hyndman, the sharp eyed young Fair Islander with his find. The cushion star was full-grown despite measuring only 10 mm across. Photos Copyright Liz Musser.

In October, there was an unprecedented wreck of thousands of the mauve stinger jellyfish *Pelagia noctiluca* washed ashore on North Haven beach, with many others noted in the geos and offshore. This species has only been seen on a handful of occasions on the isle before, and never in such numbers. This species is commonly encountered as far south as the Mediterranean, though it is known from deeper Atlantic waters too. Extreme prolonged south-westerly winds may have played a part in forcing them to our shores.



Photo left: The Mauve Stinger *Pelagia noctiluca*. Copyright Elizabeth Riddiford.

Photos middle & right: Large numbers of *Pelagia noctiluca* washed ashore on North Haven beach. Copyright Deryk Shaw.

Fair Isle has long been known for its changeable weather and we certainly saw this in 2009. September, prior to the jellyfish invasion, was marked by a succession of strong west to south-west winds with rain, and the summer was notable for its extreme dry conditions. There was a general consensus amongst islanders, including those with the longest memories, that the ground was the driest they had known for many years and even boggy parts of the Hill which previously would not carry the weight of a man were walkable in ordinary shoes – though, in demonstration of how memory can play tricks, Dave Wheeler of the Fair Isle Weather Station indicates that such conditions have prevailed before, such as in the 1970s (Figure 8).

Dave recognises a pattern of greater variability in overall weather conditions (as per rainfall example, Figure 8) and this must challenge the tolerance levels of plants and animals alike.

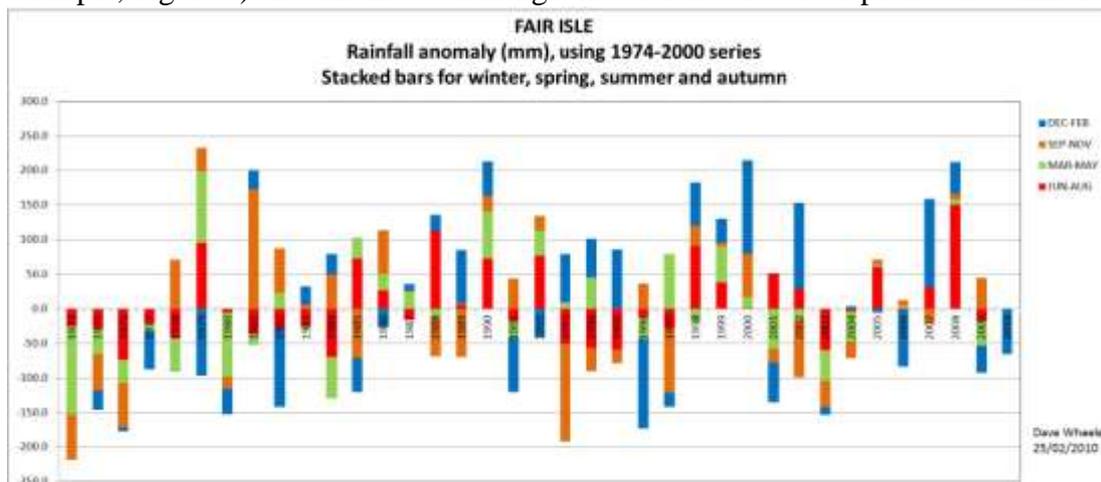


Figure 8. Annual rainfall fluctuations around a 37-year mean, Fair Isle (courtesy of D Wheeler, Fair Isle Meteorological Station).

So, for instance, mean sea temperature has risen by a degree over the last 40 years but superimposed on that are shorter term seasonal and annual fluctuations (see Figure 9) which will have a bearing on plankton ecology and populations.

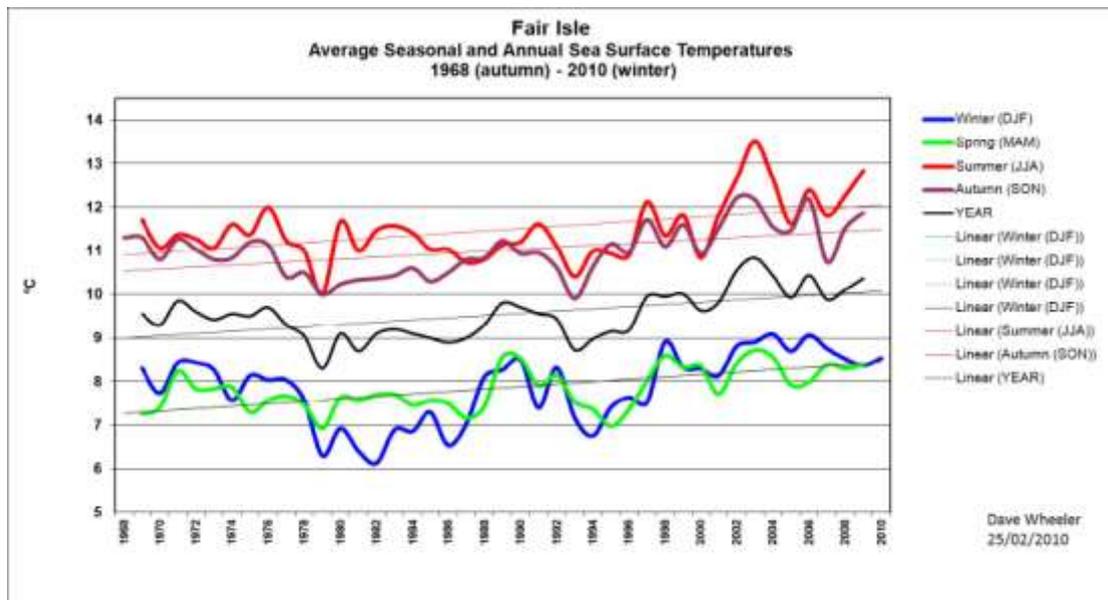


Figure 9. Seasonal and annual sea surface temperature trends and fluctuations over a 44-year period, Fair Isle (courtesy D Wheeler, Fair Isle Meteorological Station).

Fair Isle has had prolonged periods of westerly winds before, so the major invasion of a jellyfish not previously recorded in such numbers inshore may also reflect changes in its population due to climate factors rather a shorter term weather event.

[Monitoring the Sea](#)

The Fair Isle Weather Station collects a small range of sea data on a regular basis. This capacity is about to be expanded in both range and regularity. The Aberdeen marine laboratory is setting up an automatic recording gauge in North Haven which will record surface sea temperature, salinity, nitrates, phosphates, silicates, phytoplankton, wave height and frequency and sea levels. It also incorporates an automatic weather station recording air temperature, pressure, wind speed and direction. This is an excellent addition to the suite of physical and environmental data monitoring activities already underway on the isle.

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Input - including provision of information for these plans, involvement in other FIMETI activities and general support – was received universally from the Fair Isle community and FIMETI partners; and by supporters beyond the isle. We extend our sincerest thanks to everyone.

Appendix 1. Structure and Actions of Fair Isle draft Marine Action Plan

The draft FIMAP sets out 20 actions derived from six *Operational Objectives*, which are:

- Sustainable management of the marine resource
- Biodiversity conservation
- Landscape conservation
- Sustainable development
- Cultural heritage
- Research and education

Each action is set out logically under a series of headings, which are:

- *Aim (Operational objective)*
- *Title*
- *Opportunities*
- *Objective (of action)*
- *Action*
- *Measures*
- *Target*
- *Indicators*
- *Partners*
- *Target date*

The titles of the 20 actions are listed, in relation to their operational objective, below:

Operational objective: Sustainable Management of the Marine Resource

- *Title: Sea-Fisheries Technical Measures*
 - *Action objective: to promote fishing activities in Fair Isle waters which target commercial-size fish stocks only*
- *Title: Selective fishing of Shellfish*
 - *Action objective: to maintain a sustainable shellfishery*
- *Title: Shipping Area To Be Avoided*
 - *Action objective: to restrict shipping carrying potentially hazardous cargoes from sensitive sea areas*

Operational objective: Biodiversity Conservation

- *Title: Special Protection Area for Birds (seaward extension)*
 - *Action objective: to halt the serious decline in seabird breeding success in Fair Isle colonies*
- *Title: Special Area of Conservation (extension)*
 - *Action objective: to give full protection to Fair Isle's EC priority coastal heath habitats*
- *Title: Monitoring for ecosystem condition*
 - *Action objective 1: to monitor the condition of the Fair Isle marine ecosystem using indicator groups*
 - *Action objective 2: to evaluate the progress of sustainable management measures*
- *Title: Other priority habitats and species*
 - *Action objective: to highlight priority habitats and species*

Operational objective: Landscape Conservation

- *Title: Landscape*
 - *Action objective: to maintain Fair Isle's very high landscape values*

Operational objective: Cultural heritage

- *Title: The George Waterston Memorial Centre*
 - *Action objective: to expand and improve the facilities of the GWMC museum*
- *Title: Marine Archaeology*
 - *Action objective: to manage wrecks as a sustainable tourism resource*
- *Title: Coastal archaeology*
 - *Action objective: to protect coastal archaeological sites from loss through erosion*

Operational objective: Sustainable Development

- *Title: Fair Isle Community/NTS Management Plan*
 - *Action objective: to ensure a viable and successful community for present and future generations*
- *Title: Sustainable use of resources for tourism*
 - *Action objective 1: to maintain the quality and range of activities and facilities required to maintain the flow of visitors*
 - *Action objective 2: to assess and apply forward thinking for the sustainable use of resources for tourism*
- *Title: Fair Isle visitor management plan*
 - *Action objective: to enhance the tourism offer through holistic management planning*
- *Title: Recreational tourism*
 - *Action objective: to diversify the tourism offer without damaging the resource*
- *Title: Transport*
 - *Action objective 1: to ensure that the current level of transport links is maintained*
 - *Action objective 2: to work with service suppliers and SIC transport department to investigate ways of improving links*
- *Title: New build for Bird Observatory*
 - *Action objective: to sustain and enhance tourism, education and research facilities for the isle*
- *Title: Shore access*
 - *Action objective: to conserve and maintain Fair Isle's vital sea-borne access points*
- *Title: Coastal defence*
 - *Action objective: to prevent loss of infrastructure of social, economic and cultural importance*

Operational objective: Research and education

- *Title: Demonstration site for maritime research, education and dissemination*
 - *Action objective: to improve and disseminate the knowledge base*