

Forum Report Autumn 2008

Section 1: Presentation Summaries

Section 2: Workshop notes

Section 1: Presentation Summaries

1. Update from the Exe Estuary Officer, Jennifer Lockett

The Exe Estuary Partnership has created a new website about the estuary. The objectives of the new site were to:

1. Change the focus of the site from being about the Management Partnership to being about the Estuary

In order to achieve this we have made the management partnership pages just one part of a very large website with much more focus given to providing information about the estuary itself. The website provides background information about a wide range of aspects from research and studies about the estuary to information about its designations.

2. Have an up to date, fresh website which can be checked regularly to find out new information.

By changing the website to a live link connection we have enabled the Estuary Officer to have a lot more control over the content of the site. Previously we had to pay an external company to load information on to the website for us but with our new site the estuary officer is able to load information, reports, pictures etc straight on to the site at no cost. By having more control over the site we can make sure to keep the information displayed fresh and current and as long as the estuary officer has access to a computer we can load your notices, event, picture etc on to the website within a matter of hours.

3. Be the principal location for information about the estuary

We have tried to create a very informative and wide ranging website with lots of contact details for different clubs, places to stay, places to eat, commercial interests as well as details of the heritage and wildlife of the estuary.

Also we have tried to balance the information level and appeal of the website so that is a useful information point for local communities as well as National or International visitors with an interest in the site.

4. Create a useful tool for local communities to share information

Where ever possible we have aimed to create pages that are usable and useful for the local communities around the estuary. Our news pages give detailed up to date information about issues affecting the estuary while our notice board provides an opportunity for relevant information to be posted on to the site. Our events calendar provides information on all of the activities available for communities to participate in, such as informative talks and practical volunteer days.

In order to make the site as 'friendly' as possible to use we have created email links so all you have to do to have your event, notice, holiday home details etc added to the website is to email them to the link and they will be added on for you.

5. Improve the transparency of the role of the partnership



The activities of the partnership can be viewed through the management pages of the website allowing access to all of the key documents which drive the work of the partnership as well as minutes of previous meetings so you can read exactly what has happened in the Management Group or Officers Working Group meetings.

Also available is an Estuary Officer blog where you can read about the role of the estuary officer and get a sense for what the delivery of the management plan actually entails on a day to day basis.

Your Feedback

The most important information that we now need is your feedback on what you think of the website and ideas that you have of how it can be improved. If there is anything that we have missed, whether it is a place to eat or an event, we want to know about it and get it loaded on to the site.

The website is an evolving project and we hope to continuously improve and update it. We are currently working on a kid's page and a Friends of area but we need your ideas as well.

The PowerPoint presentations to accompany the following presentation notes are available to download on the Exe Estuary website (www.exe-estuary.org).

2. Climate Change; an Overview: Midge Kelly, Devon County Council

So, what is Climate Change and what causes it?

The Earth's surface heats up as it absorbs short-wave radiation from the Sun. This energy is redistributed across the globe by the circulation of the oceans, and is radiated back to space.

Atmospheric greenhouse gases such as water vapour, CO₂, methane and nitrous oxide trap some of this outgoing heat energy, which warms the lower part of the Earth's atmosphere. An analogy is made with the effect of a greenhouse, which allows sunshine to penetrate the glass that in turn keeps the heat in, hence the greenhouse effect. This naturally occurring greenhouse effect is very important because it keeps the surface of the Earth 33°C warmer than it would otherwise be and makes it habitable.

The Enhanced Greenhouse Effect

Any factor that alters the balance between the amount of incoming solar radiation and the amount of heat radiated back out to space will create a warming or cooling at the Earth's surface and in the lower atmosphere – and can affect climate.

Since the start of the Industrial Revolution, concentrations of the 3 main greenhouse gases have increased directly or indirectly as a result of human activities:

As result of the enhancement of the greenhouse effect by these gases, more of the sun's energy is retained by the Earth's atmosphere and our planet is **warming**.

Observed Global Warming

Since 1861, when direct temperature measurements were first made there have been 2 periods of warming: 1910 – 1945 and since 1976. Between 1906 and 2005, average global temperature increased by around 0.74°C. The 1990s was the warmest decade and 1998 remains the warmest year in the instrumental record, followed closely by 2002, 2003, and 2004.

Global warming in the SW

There is evidence of global warming at a local level too – since about the mid 1960s, mean average temperature recorded for Exeter has increased by around 0.9°C.

Global warming is the driver for climate change.

A warmer atmosphere has more energy and can hold more water. It also means warmer oceans.

So what are the effects of climate change at a local level?

The effects of climate change are felt through 3 main attributes – temperature, precipitation and sea level change

Since about the mid 1970s, something has been happening. There have been several years with unusually high summer temperatures – 1975, 76, 83, 89, 95, 2003 and 2006.

Statistics show that in some parts of the SW, precipitation has increased at a time when it has decreased in other parts of the SW. This is because rainfall is a very localised phenomenon, influenced primarily by natural factors such as the distribution and movement of clouds and storms, as well as the interaction with the land surface.

But if we look at seasonality – the ratio of winter to summer rainfall – a trend emerges which is consistent across local areas.

Since the mid 1970s, there has been a tendency towards wetter winters and drier summers, which is in line with predictions from climate change models.

Average sea level is the third of our attributes, and is influenced by land movements as well as climate-induced changes. Britain is moving rather like a sea-saw, around a SW-NE axis. Northern Britain is still rising following the melting of ice sheets at the end of the last Ice Age some 18,000 years ago. Think of it like someone breathing in after having a heavy weight lifted from their chest! Conversely, areas such as the SW of England are sinking, which means that relative sea level is rising.

Global warming is already resulting in a warming of the oceans, and a consequent expansion of their volume. It is also bringing about an increase in the rate of melting of ice sheets and glaciers, all of which increases the volume of the oceans. The increased volume is causing sea levels across the globe to rise and, unfortunately for us here in SW England, the effect is exacerbated by the sinking of the land - a double whammy.

Future Climate

These depend on a wide range of factors, including future greenhouse gas emissions and socioeconomic factors such as population growth and how economies, energy technologies and societies develop. There is also considerable variation between models which adds to the general uncertainty. The following predictions have been developed by the IPCC, the Inter-governmental Panel on Climate Change.

- Global Temperature projection to 2100: global average temperature could increase by between 1.4 and 5.8°C above 1990 temperatures.
- Projected summer temperature changes: worst case scenario, +1.1°C (to 32.9°C) by 2010 and +4.2°C (to 38.3°C) by 2080.
- Global Precipitation changes by 2080: Equatorial regions will become much wetter; latitudes close to the poles will become wetter. Those between, will become drier.

- Devon projected precipitation changes: worst case scenario, no change by 2020s, 8% drier by 2080s.
- Devon Change in seasonality: worst case scenario, 24% wetter winters by 2080s and 55% drier summers.
- Global sea rise projection to 2100: between 9 and 88cm rise between 1990 - 2100
- Projected sea level rise for South west: between 20 and 80cm by 2080

Extreme Events

- Higher winter rainfall = River flooding.
- More intense rainfall = Flash flooding especially in urban catchments.
- Increased storminess = Storm damage.
- High summer temperatures = Drought and health issues e.g. heat stroke.
- Sea level rise and increased storminess = Storm surges and coastal flooding.

Don't despair!

"All the predictions – both good and bad – tell us absolutely nothing about what is possible. Trends and events relate only to what is probable. Possibilities are the stuff of life, visions to act upon, doors to walk through."

Tom Atlee (author of *Census Fatigue & the Co-creation of Positive Possibilities*)

3. The Impacts of Climate Change on the Exe: Martin Davies, Environment Agency

The presentation concentrated on the likely (i.e. not definite, but possible and we have to plan for it) impacts on flood and coastal risk in the Exe Estuary.

Climate Change or just bad weather?

Examples

Hazelwood Caravan Park, Dawlish Warren from Shutterton Brook, 2000

Exmouth Seafront, 2004

Dawlish Warren – 1930 – 1949

Dawlish Rail line – several times, every year

Can we attribute these events to climate change? – No but....

In the future we might be able to look back over time and work out whether the RISK has changed as a result of climate change

Climate Change – increase in Flood & Coastal Risk

What does an increase in Risk mean?

- Increase in frequency of storm events
- Increase in consequence or damages due to storm events & sea level rise

Is sea level rise actually happening?

Yes. Based on REAL DATA. Approx 200mm in 100 years based on data from Newlyn tide gauge ie 2mm every year since early 1900s

But what about the next 100 years?

In the South west over next 100 years we have to plan for +800mm increase in Sea Level Rise, which Includes component of land sinking at around 1mm per year - increases the net effect of the rise.

Sea Level is likely to become very noticable in the future - in our lifetime.

Increase in Storm Events

1 in 200 year (0.5% in any one year) tidal event becoming 1 in 8 year (>10% in any one year); 0.67m increase by 2085

This means that the Lypmstone scheme would have to be 0.67m higher if built to a 1 in 200 year standard in 2085. Are we willing to live with this, or do people want to live behind flood walls. (still a risk of overtopping and catastrophic breach)

Rule of thumb – a 1 in 200 (0.5% every year) tidal event now will be a 1 in 20 (5% every year) event in 100 years time

Climate Change and flood risk – how it could affect the Exe Estuary

- Areas at Increased Risk – wider flood plain, deeper, faster water
- Greater more frequent storm damage – 10% increase in wave height and wind strength hence energy; rainfall intensity
- Impacts on Infrastructure – defences, transport, property e.g. cost & impact of building future damage, increase in gate closures etc
- Longer Duration of Flood – Higher low tides
- Coastal Squeeze – natural features being drowned
- More rapid erosion – Dawlish Warren breached again?
- Loss or reduction (or gain?) of amenity beach
- Higher Water table – groundwater flooding e.g. Weymouth
- Increase in river flows – 20%?
- Increase in taxes & insurance costs

Climate Change and flood risk– what are we doing about it?

- Better understanding of the risk – climate change science, flood & erosion risk mapping
- Strategic Planning – 100 year planning, SFRAs, CFMPs, SMPs, Strategies
- Sustainable Management, working with nature not against it – adaptable defences or alternative options eg managed realignment opportunities, beach recharge etc
- Raising Awareness – huge media interest, public engagement
- Identifying Opportunities – habitat & amenity creation, partnerships

Contact: martin.davies1@environment-agency.gov.uk

4. Impacts on Wildlife and the Lower Clyst Project: Gavin Bloomfield, RSPB

There will be direct and indirect effects of climate change on our wildlife. For some species we will see positive impacts as more habitats becomes suitable while for others habitats will become reduced and there will be increased competition as other animals move into new ranges.

Direct Impacts of Temperature Changes

A direct effect of climate change is an increase in temperature an example of temperature changes impacting on a species is the Dartford warbler. A recent repeat UK monitoring of breeding populations shows that, not only has it marched northwards in England and Wales, but is has also started to advance up the hill. Indeed, even starting to turn up in moor land habitat (e.g. Exmoor) and not just its traditional lowland heath land. Also we are seeing a beneficial effect in the winters when repeated hard winters or no longer killing off most of the population.

Temperature changes are also effecting waders which previously tended to avoid the east coast because it was too cold, favouring the milder west coast. However, now that the east coast winters are milder, more birds are wintering there. This reduces the amount of effort they have to expend on flying, because the east coast is nearer to their breeding grounds. This will effect the populations of waders on the exe as they favour east coast estuaries. However, this does not mean that west coast estuaries aren't a useful insurance policy, for those occasional future winters which are harsher than average.

There has been a recent dramatic decline nationally in the last 4 years. Potentially due to even further eastward drift? – with more birds now wintering on the near continent (particularly Dutch coast).

Or is there a reduction in total numbers? (These are high arctic breeding birds and breeding success is very dependent upon conditions in these areas)

With global warming unlikely that we will see a return to former numbers on the Exe and will probably experience continuing decline in SW wintering population.

A key issue for the Exe is what happens if mean numbers drop below qualifying thresholds for designation? Sites less protected, but will remain critical to the survival of those wader populations in particularly harsh winters. One of the effects of climate change is increased extreme weather events.

Temperature also affects birds more indirectly, for instance through effects on food resources.

RSPB have been studying the decline of the Ring Ouzel. It appears that they are finding it increasingly hard to get at soil invertebrates in hard, dry summer soils. Other effects contribute to this (e.g. drainage, compaction by stock) but climate change is also a factor. The problem is likely complex (1) birds literally can't get their beaks into the soil, (2) worms bury deeper when the soil dries out, (3) reduced moisture leads to desiccation of some invertebrates, or their eggs. We also know that song thrushes in southern, arable England suffer from effects of aggregate drainage, so probable that climate change-related drying will also affect them.

Impact on food webs

Recent research shows an indirect, food-related impact for Magellanic penguins as they are having to swim further to find food during incubation – this seems to be related to climate-change induced shifts in food availability. The costs are two-fold: (1) the adults expend more effort on swimming, (2) greater chance of the eggs chilling and clutch failure.

Similar effects on food webs are also becoming apparent around the UK. Because so much of our CO₂ emissions enter the sea, the seas becoming more acidic, this reduces the growth rate of shellfish (because their shells are calcareous), which in turn could reduce food availability for waders and wildfowl etc.

Also, surface sea temperatures are increasing – leading to changes in plankton and fish communities in the North Sea. A loss of sand eels, replaced by e.g. pipefish, which are less nutritious has resulted in repeated whole-sale breeding failures, e.g. for auks and terns.

Changes in Phenology

As well as changes in food abundance, climate change is also leading to problems associated with the timing of breeding. Phenology is the study of the times of recurring natural phenomena

This is happening for some populations (not all) of both resident (e.g. blue tit) and migrant (e.g. pied fly) species. They used to time their egg laying so that chicks hatched to coincide precisely with synchronous emergence of glut of caterpillars. Now, both timing of bird egg laying and timing of caterpillar emergence has advanced, but (for some bird populations) at different rates. This means that the chicks' hatching is not so synchronous with peak food supply – leading to reduced breeding success.

One example that combines both phenological mismatches and reductions in abundance of food is the work by James Pearce-Higgins on Golden Plover. They time chick hatching to coincide with emergence of crane flies from the ground. Like with the tits and pied flies, both egg laying and crane fly emergence have advanced with warmer springs, but not at the same rate – so there are signs of a developing asynchrony.

On top of this there is also evidence that fewer crane flies are emerging – suspicion is that their eggs (in the ground) are getting desiccated by the hotter summers. There is ongoing research to try to identify methods to manage this issue.

The ultimate indirect effect

The examples so far concern reductions in breeding success, survival or even numbers. However, for amphibians, it is already much worse than that. Many species of frogs have already gone extinct because of climate change. The Golden Toad of Costa Rica is probably the best known example.

The basic problem is that warmer temperatures are more favourable to a pathogenic fungus, which is what is killing them. So, the fungus is the 'proximate' cause of death, but climate change is the 'ultimate' cause.

Unseasonable Precipitation

Not all effects are due to changes in temperature regime. There are also effects of precipitation, especially unseasonable downpours,

We are seeing an increasing frequency of really dramatic deluges, for instance in June. Two species which suffer are Capercaillie and Black grouse, whose chicks have to move through dense vegetation to find food. When this vegetation becomes sodden, so do the chicks – this then leads to excessive chilling and mortality of the chicks.

Sea level rise

The final indirect effect to consider is that of sea level rise, especially when combined with the increased frequency of extreme events (e.g. storms).

The sea is rising – for the moment this is driven mainly by the expansion of the oceans as the water warms up. However, it will increase a lot more if glaciers and ice caps continue to melt. The summer Arctic Ice extent is shrinking by 7.5% a year

This is all a particular problem for bitterns (as well as issues of coastal squeeze for species dependent on inter-tidal habitats – unless we realign coasts). The problem is that our best place for bitterns is a few east coast freshwater wetland sites, separated from the sea by little more than a sea wall of some sort. Problem now is that sea level rise and storms are combining to give increased frequency of saline inundation to freshwater, killing the fish (e.g. rudd) on which bitterns depend.

This is why our key climate change response for bitterns has to be (1) protect those sites for now, (2) build new, big sites away from the coast. This is what RSPB are doing (e.g. Needingworth, Lakenheath, Ham wall).

Changes in distributions already apparent

So, climate change can affect the suitability of different places for species. In some places they may do better, in some they may do worse. The net effect of this is a change in distribution.

The Silver-studded Blue (heath land specialist, restricted to south of England and Wales) for instance has not advanced north, even though the climate has become more suitable. The reason is undoubtedly that its specialist habitat (heath land) is too fragmented, meaning that individuals can't disperse successfully to new patches.

So, can we predict the future?

We think we can. The main tool for doing so is the so-called 'climate envelope model'. This relies on the fact that, for most species, the range of places where that species lives is very well described by variation in weather (chiefly minimum winter temp, maximum summer temp and rainfall) – that is each species has a characteristic 'climate envelope'.

With this confidence, we can then ask where that suitable climate will occur at the end of this century, using a middle-of-the-road IPCC climate change prediction. We find that red grouse have got much less land in which to live. This includes, in the UK, loss of our English, Welsh and Irish populations.

RSPB research shows that climate is already having a major impact on bird distributions

A recent piece of work gives us extra confidence in our climate-envelope based predictions of the future.

We tried to 'retriodict' (hindcast) the patterns in change of range of UK 'Rare Breeding Bird Panel' species, based on knowledge of their climate envelopes and the way that the UK climate has already changed in the last few decades. It works very accurately – both for increasing species like little egret and for retracting species such as redwing – which gives us faith in this technique, and the rather scary predictions which it produces.

Which species are most vulnerable?

For some species the future looks bleak – as they have nowhere to go (in a UK context). Unless there are big enough climate change 'refuges', e.g. on the colder north-facing slopes and it is these sorts of species (northern distribution, mountain top specialists) which are among the most vulnerable to climate change – because they have nowhere to go;

- 1) If your range is at the top of Scotland (in a UK context), or near the poles (in a global context), there is a limit to how far north (or south) you can move.

- 2) If you live on mountain tops (like ptarmigan, snow bunting) you can't go any higher, if the climate at the mountain top becomes less suitable – maybe there will be refuges in north-facing slopes? If they're big enough.
- 3) In a global context, we know that low-lying islands are already going under the sea – a threat to island endemics, as well as the human inhabitants.

So, for instance, we may see reductions in the breeding populations of a whole suite of species which visit Europe in winter, because of loss of their tundra and taiga habitats.

New arrivals

But, it isn't all bad news!

We're predicted to get a load of new species – e.g. little bustard, little bittern – if we provide them with the right habitats.

How should we respond?

- Protect what we already have
- Build resilience
 - bigger populations
 - bigger habitat areas
- Enable adaptation

Improved Habitat

In 2006 the benthic invertebrate biomass at Goosemoor was significantly lower than in the adjacent area of the River Clyst. By 2007, after the installation of a water level management device, the benthic invertebrate biomass at Goosemoor was higher than that found in the River Clyst the previous year.

5. South Devon and Dorset Shoreline Management Plan: Graeme Smith, Teignbridge District Council

WHAT IS A SMP?

A Shoreline Management Plan is a DEFRA High Level Target that offers guidance at a strategic level, designed to assist coastal defence decision making for a particular length of coastline.

It aims to identify sustainable coastal defence options, taking account of the influence and needs of the natural, human and built environment.

In doing so, it forms part of the Government's strategy for managing flooding and coastal erosion.

The strategy aims to manage risks by using a range of methods which reflect both national and local priorities, to:

Reduce the risk of flooding and erosion to people and their property; and
Benefit the environment, society and the economy as far as possible, in line with the Government's sustainable development principles.

SMPs seek to promote 'sustainable shoreline management policies' for a coastline into the 22nd century considering various timescales (epochs).

0 to 20 years (short term)

20 to 50 years (medium term)

and 50 to 100 years (long term)

The recommended SMP2 policies to achieve management objectives are:

Hold the existing defence line;
Advance the existing defence line;
Managed realignment;
No active intervention.

4 basic policies:

1. Hold the existing defence line
2. Advance the existing defence line
3. Managed realignment
4. No active intervention

The role of stakeholders

Benefits of engaging stakeholders include
Greater data collection
Greater objective identification
Greater confidence in results
Education and understanding of recommended solutions
Avoidance of conflicts through earlier scrutiny

Assists the adoption of SMP by Local Authorities / EA

Ultimate 'ownership' of SMP

SMP delivery process

Stage 1: Scope the SMP

Stage 2: Assessment to Support Policy Development

Coastal Processes

Baseline scenarios appraised: No Active Intervention / With present management

Stage 3: Policy Development

Initial Findings

Appraisal against drivers

Draft Policies

Stage 4: Public Examination

Stage 5: Finalise Plan

Stage 6: Plan Dissemination

Timeframe

Nov '07 - Elected Members Forum

Ongoing - Stakeholder Engagement

Mar '08 – Series of Public / Stakeholder Forums

June '08 – Elected Members Forum & Technical Officers Group

July '08 – Series of Key Stakeholder Forums

Sept '08 - Elected Members Forum

Nov '08 – Series of Key Stakeholder Forums

Draft SMP

Jan / Feb '09 – Elected Members and Key Stakeholders - present draft SMP

Mar & April '09 – Public exhibitions and 2 month consultation period

Final Draft SMP

May / June '09 – Elected Members Forum

June/ July '09 – Publish SMP

Adoption by Local Authorities

The SMP policies for Exe Estuary will be announced at a public meeting on Tuesday 18th November. To find out more and book your place please contact the SMP team at:

www.sdadcag.org

smp@teignbridge.gov.uk

01626 215748

Section 2: Workshop Session Notes**1. Creating a Wildlife Leaflet**

Following on from the success of the Exe Activities leaflet, created earlier this year by an Exe Action group of local club representatives, the workshop aimed to gather ideas on the content and design of a wildlife leaflet for the Exe. The current leaflet is in need of a refresh and local community input is invaluable to this process. The main focus of this session was to consider the audience, the scope and the usability.

It was decided that the leaflet should:

- Be fairly simple providing basic information about the estuary but with plenty of references as to where people can find out more, this will ensure that the leaflet is accessible to all ages and useful to different levels of interest.
- Aim to capture the changes in season and tide and how these influence what can be seen. This will hopefully avoid the disappointment of visiting a bird watching area at the wrong time.
- Cover the ecology of the estuary - not just the species that are present but how important the whole ecosystem is and the role it plays.
- Provide clear disturbance avoidance messages
- Use lots of imagery to depict species that can be seen and where
- Retain the theme of the existing Exe leaflets so that they can be identified as the same family

These principles will be the basis for the creation of the leaflet but there is still a lot of work to be done and we are still interested very interested in collecting your ideas.

The follow on meeting is planned to take place on Friday 21st November between 2pm and 4pm at County Hall in Exeter. Neil Downes, as Forum chair for the partnership, will chair the meeting and provide feedback to the partnership as appropriate.

2. Interpreting the History of the Exe

The Exe Estuary has a rich cultural and maritime history. The workshop discussed ways that we can best capture the story of the estuary with leaflets, a heritage trail or an exhibition as possible ideas. The session was led by Katherine Weston of the Devon Records Office. The main points covered were:

- The audience: tourists, residents, children, disabled users
- The relationship / connection with the proposed interpretation centre in Exmouth
- The use of audio tours for users with varying needs
- The importance of capturing the memories and memorabilia of the people who live around the Exe and passing this on to future generations before it is lost. Would need to carefully plan and promote the collection of people's stories to ensure everybody who wants to has an opportunity to participate.
- Funding – would enough funding be available to achieve what is possible.
- The use of historic buildings such as the Turf and the boat house.
- The importance of linking in with local museums and history groups
- How transport links on the estuary could be promoted to explore the trail e.g. ferry services

The comments and ideas from the workshop have been incorporated into the first stages of an application to the Heritage Lottery Fund. We are now waiting for their response so that we can gain an idea of the likelihood of receiving funding and whether there were any particular elements that could be added to strengthen the final application. The availability and quantity of funding will determine the scope and potential of the project.

2. Examining the Risk to the Exe Estuary

Following on from the flood risk and Coastal Management Study presentations the group discussed the themes raised and asked questions of the presenters.

Key points raised (transcribed flipchart notes)

- Concern for huts and houses on Dawlish Warren – seen as critical
- Problem of beaches steeping, the better use of groynes could slow down the process.
- The potential of development and regeneration for Exmouth and Dawlish e.g. the possibility of a Marina being created in Dawlish to promote tourism – a study could investigate the coastal defence merits.
- There is no compensation for the loss of houses from coastal erosion in the UK.
- Limiting the amount of concrete used could have benefits for high water tables e.g. car parks could be semi permeable.
- Rise in sea level could cause increase in ships.
- Flood relief schemes cause muddier rivers in later years due to higher water level.
- Should we still manage the area or leave it alone?
- East Devon concrete development on Exe Bank
- Dredging should be used for local management.

4. Wildlife Adaptation

Continuing the climate change theme the group discussed issues raised in the RSPB's presentation as to the future impacts for wildlife on the Exe and projects that will attempt to limit the disruption.

Key points covered:

- The need to limit pressures (e.g. competition from invasive species) on different organisms to give best chance of survival / adaptation to climate change.
- Need to create alternative habitat further inland to provide suitable conditions for wildlife as it responds to climate change.
- Could be some positive cases of increased habitat ranges due to varying conditions.