Scottish Wild Beaver Group

Why Scotland urgently needs beavers

..

Key environmental problems facing Scotland

Flooding

In Scotland around 108,000 properties are at risk of flooding

Estimated annual flood costs are in the region of £252 million

Flood Risk Management Strategy NE, SEPA 2015. Photos by

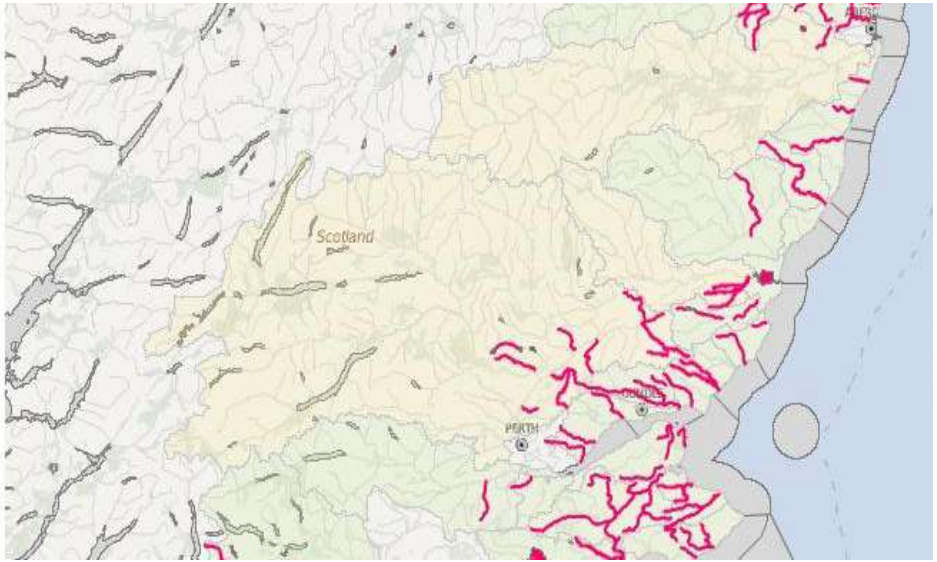
Soil Erosion

Annualized cost of loss of organic soil from arable land and associated loss of CO2 in Scotland - £60.5 million (2009)

(Dobbie et al, 2011) ; Photos

Water Quality – Rural Diffuse Pollution

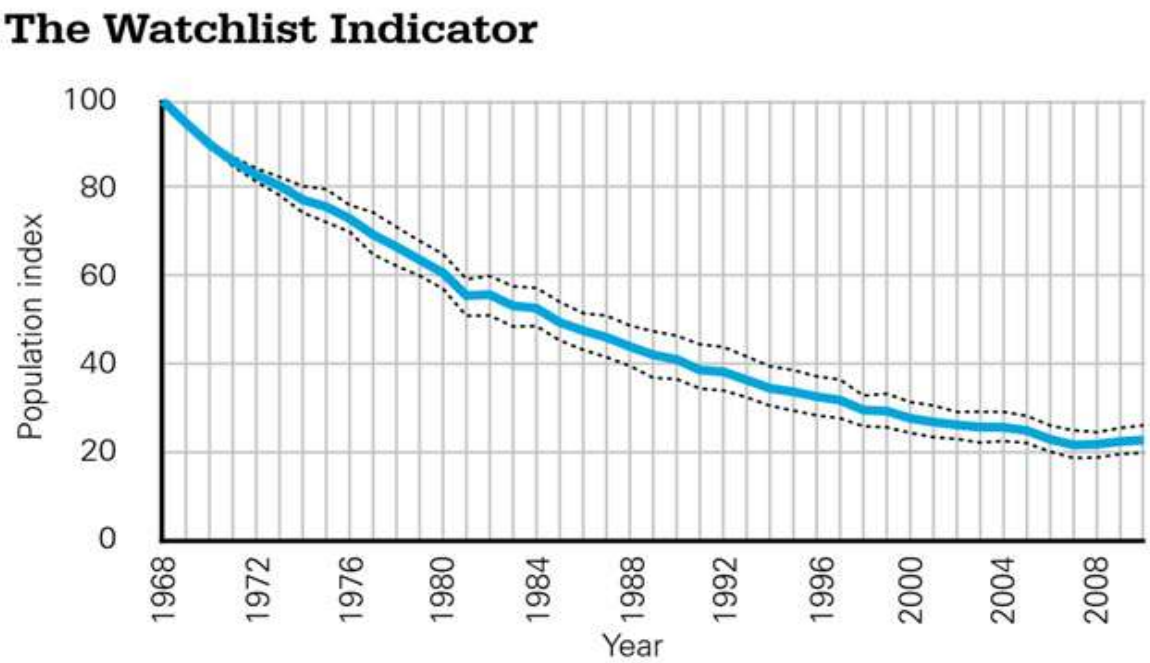
… where nutrients, pesticides, faecal bacteria, chemicals are lost from the land into local burns, rivers, lochs and groundwater as a result of surface runoff.



Red areas = subject to rural diffuse pollution.

Biodiversity Loss

Watchlist Indicator showing the average population trend for 77 moths, 19 butterflies, 8 mammals and 51 birds listed as UK Biodiversity Action Plan priorities, 1968-2010.




LOVE THE PLANET
CHANGE THE SYSTE

What can be done?

There is one small thing that we can do in Scotland to make a really significant difference …

Maintain and Encourage Wetlands

Why wetlands?

Benefits of Wetlands

- absorb agricultural run-off (nitrates, phosphates and pesticides) and prevent eutrophication.
- retain soil and prevent siltation of water.
- provide habitat for greater biodiversity.
- buffer and slow down flood waters.
- hold water in times of drought.

(Scallen, 2008)

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How can we get more wetlands quickly?

… encourage beavers to build them.

Beavers!

Beavers are nature's hydro engineers - extremely efficient builders of high quality wetlands

Key facts

- Beavers are strictly herbivores – grass, bark, aquatic plants
- Beaver activity is usually confined to within 20 metres of water
- Native in Scotland until @ eradicated 400 years ago – now present in Knapdale (RZSS/SWT trial) and Tayside
- Beavers have now been reintroduced in 24 European countries of their former range.
- Scotland has less than 500 beavers in total (cf. France 10,000; Germany 15,000, Poland 41,000, Norway 80,000)

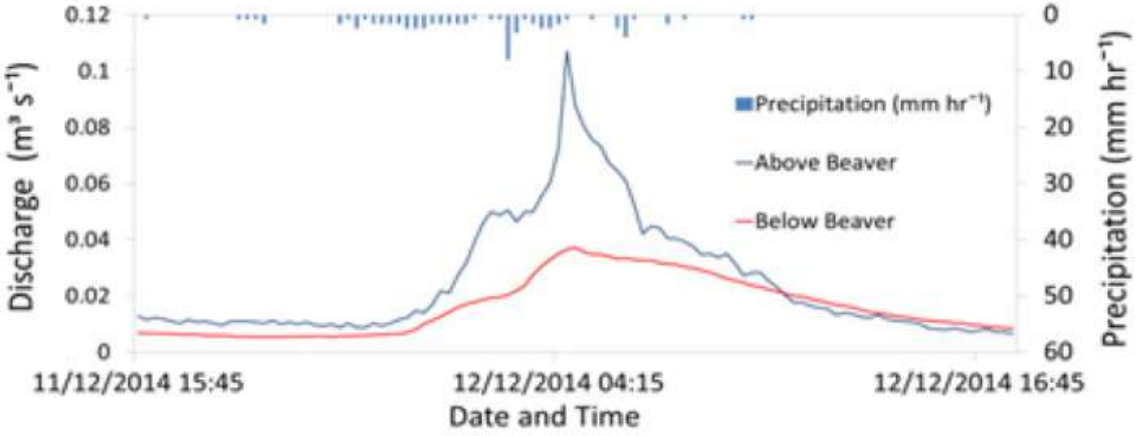
(Halley et al. 2012; Photo: Derek Gow)

Flood Prevention

Beavers dams can reduce floods, moderate flow velocity and effects of peak and low flows.

During storm events, beaver dams reduced peak discharges by 34%.

Flow in and out of a Beaver site during a storm event



Eurasian Beaver have now been reintroduced specifically to combat floods at sites in Cornwall, Essex and Yorkshire

(Nyssen et al., 2011; Puttock et al., 2016)

Better Water Quality

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Studies have found beaver ponds can...

- **Mitigate Diffuse Pollution**
  -Reduce Nitrates by 45% preventing algal blooms
- **Mitigate erosion**
  - Reduce suspended sediment by 40%
-

Cleaner rivers not only benefit invertebrates and fish, but humans too

(Wohl, E 2013; Bason et al., 2017; Bledzki et al.,

Beaver wetlands bring Biodiversity

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Stirling University research found "a massive (148%) increase" in local plant life where beaver dams are present

Who else benefits?

- **Aquatic invertebrates**
- **Insects / Pollinators**
- **Amphibians**
- **Waterfowl / waders**
- **Bats**
- **Fish**
- **Water voles / otters**
- **Woodpeckers / owls**

"a very positive influence on biodiversity" *SNH's Martin Gaywood*

(Law et al., 2017; Gaywood, 2018;)

Additional benefits to society…

- **Beaver dams increase water storage - acting as a reserve in periods of drought**

- **Beavers are already proving a valuable source of environmental education and wildlife tourism opportunities**

(Law et al., 2017; Johnston, 2014; Vowles N 2018; Scottish Wildlife Trust, 2016;)

Photos : SWT ; trip adviser / Outdoor Explor
(Blairgowri

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The Telegraph

Beavers reduce river pollution by building dams, study shows

The Telegraph

Beavers shot on Tayside as farmers complain about damage to land

theguardian

Dam it! How beavers could save Britain from flooding

The Telegraph

Beavers are back and thriving but not everyone is happy

Mail Online

Beavers boost countryside

Scottish Daily Mail

Folly of bringing back the beavers

theguardian

Meet the latest recruit to the UK flood defence team: the beaver

Villagers in the Forest of Dean back plans to release a beaver family to protect their homes by damming waterways

The Telegraph

Farmers' warning over beaver damage as new report praises the 'water engineers'

Mitigation of Conflict

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- **Wide range of effective non-lethal mitigation techniques (long-term solutions)**

- **Some financial assistance for mitigation to become available under SNH management plan**

Pre-emptive engagement is key to build awareness of wide range of mitigation

Do beavers help or hinder Atlantic salmon?

(Kemp et al., 2012; Bouwes et al., 2016, Bukaty and Leighton, 2

Evidence from Scandinavia

- The debate about beavers and Atlantic salmon is raging in Scotland. Many salmon specialists have become convinced that beavers will be a problem for Scottish salmon.
- Very little research has been done to date as the two species coexist happily in Scandinavia in rivers very similar to Scottish ones, but the majority of evidence seems to point to more advantages than disadvantages. (Kemp Report). We don’t find this surprising.

Where are we now?

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Eurasian beaver is the first mammalian species reintroduction in UK. Beavers became a protected species in Scotland on 1 May 2019.

Current Management Framework is deeply flawed and raised several critical animal welfare and conservation issues.

It effectively creates "no go zones" for beavers in large parts of Tayside – often where there benefits are most required.

"Natural Expansion only" policy delays other parts of Scotland receiving beaver benefits in short term and limits translocation as a means of mitigation

(Gaywood, 2018, Photo: Dory 2018,)

Legalized killing

- A large number of licences to kill beavers have already been issued by Scottish Natural Heritage to landowners.

- Farmers on “prime agricultural land” (about 65% of beaver territory in Tayside) are not required to try alternative mitigation before applying for a lethal control licence.

- There is no “closed season”. When killing of females occurs in the “kit dependence period” (April - August), any unweaned kits left in the beaver lodge will die of starvation.

(Campbell-Palmer, R., Puttock, A., Graham, H., Wilson, K., Schwab, G., Gaywood, M.J. & Brazier, R.E. 2018. Survey of the Tayside area beaver population 2017-2018. *Scottish Natural Heritage Commissioned Report No. 1013.* Photo: Featurepics)

Key Take-aways

The Scottish environment is under threat in many ways, some of which are critically important for our economy.

Beaver wetlands will help towards improving our environment.

Beavers are not trouble free, but the modest cost of management will be repaid generously in environmental benefits

(Photo: Brightsea Print Group

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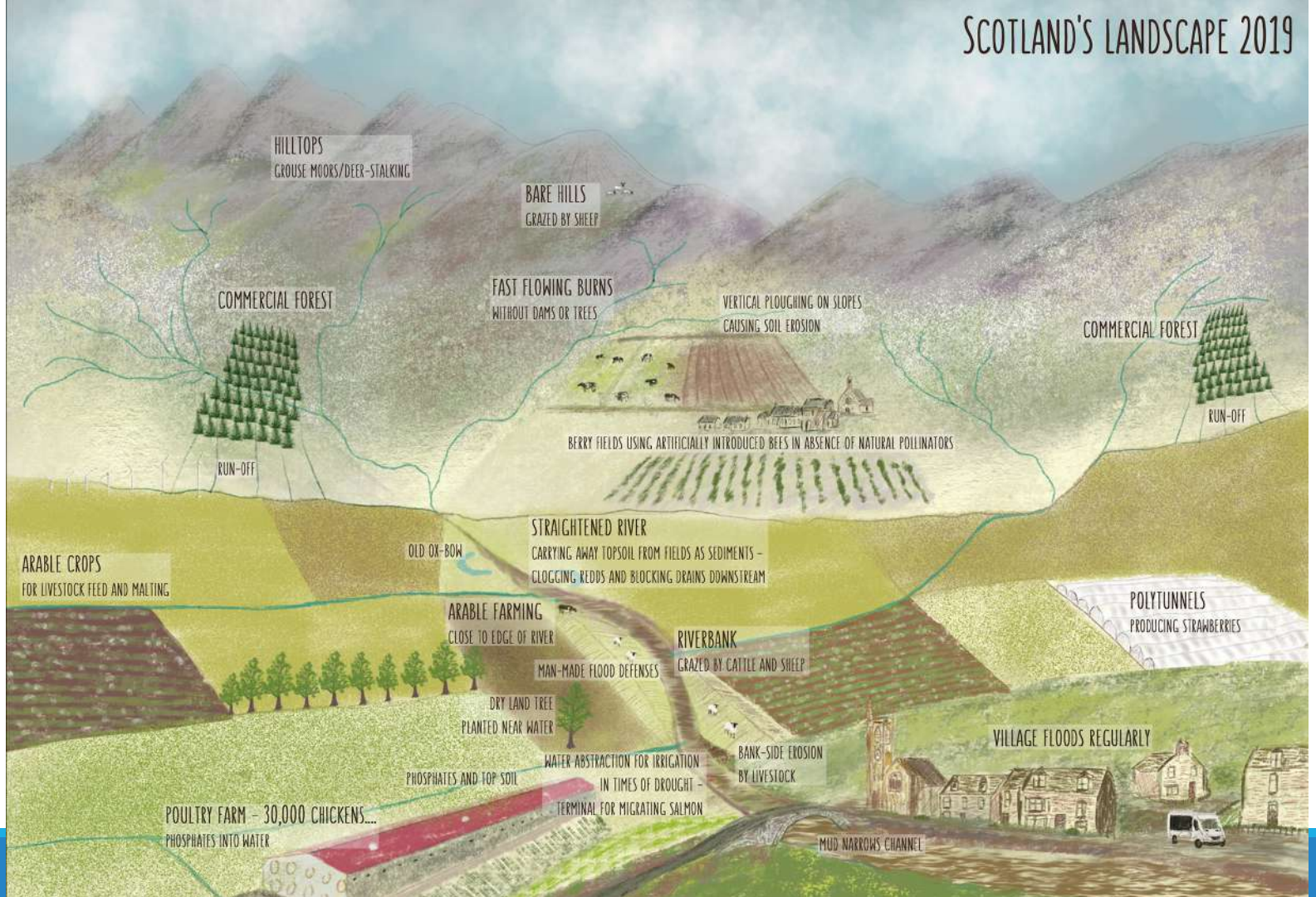
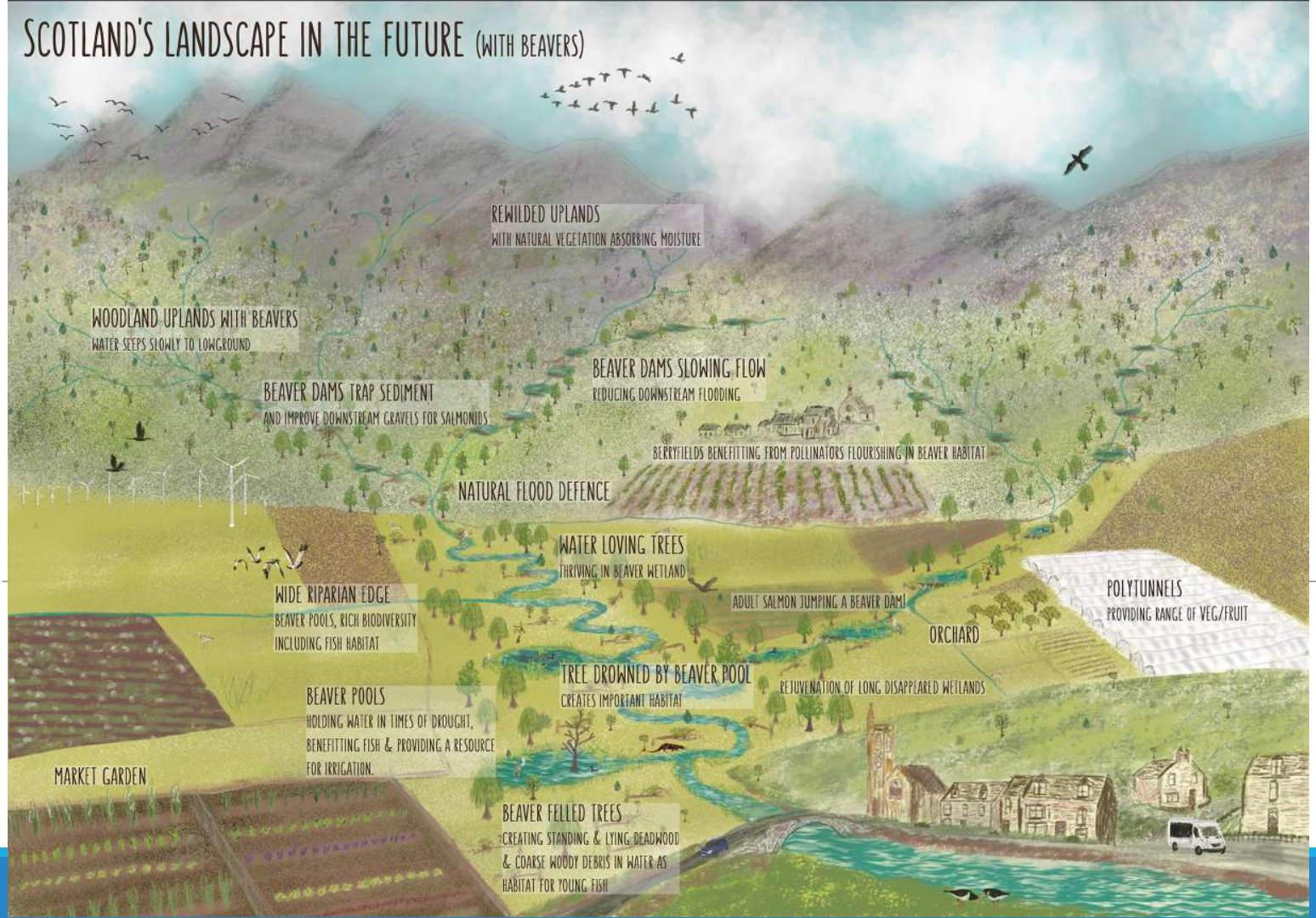

SCOTLAND'S LANDSCAPE 2019
HILLTOPS
GROUSE MOORS/DEER-STALKING
BARE HILLS
GRAZED BY SHEEP
COMMERCIAL FOREST
FAST FLOWING BURNS
WITHOUT DAMS OR TREES
VERTICAL PLOUGHING ON SLOPES
CAUSING SOIL EROSION
COMMERCIAL FOREST
RUN-OFF
RUN-OFF
BERRY FIELDS USING ARTIFICIALLY INTRODUCED BEES IN ABSENCE OF NATURAL POLLINATORS
STRAIGHTENED RIVER
CARRYING AWAY TOPSOIL FROM FIELDS AS SEDIMENTS -
CLOGGING REDDS AND BLOCKING DRAINS DOWNSTREAM
OLD OX-BOW
ARABLE CROPS
FOR LIVESTOCK FEED AND MALTING
ARABLE FARMING
CLOSE TO EDGE OF RIVER
RIVERBANK
GRAZED BY CATTLE AND SHEEP
POLYTUNNELS
PRODUCING STRAWBERRIES
MAN-MADE FLOOD DEFENSES
DRY LAND TREE
PLANTED NEAR WATER
VILLAGE FLOODS REGULARLY
BANK-SIDE EROSION
BY LIVESTOCK
WATER ABSTRACTION FOR IRRIGATION
IN TIMES OF DROUGHT -
TERMINAL FOR MIGRATING SALMON
PHOSPHATES AND TOP SOIL
POULTRY FARM - 30,000 CHICKENS....
PHOSPHATES INTO WATER
MUD NARROWS CHANNEL


SCOTLAND'S LANDSCAPE IN THE FUTURE (WITH BEAVERS)
REWILDED UPLANDS
WITH NATURAL VEGETATION ABSORBING MOISTURE
WOODLAND UPLANDS WITH BEAVERS
WATER SEEPS SLOWLY TO LOWGROUND
BEAVER DAMS SLOWING FLOW
REDUCING DOWNSTREAM FLOODING
BEAVER DAMS TRAP SEDIMENT
AND IMPROVE DOWNSTREAM GRAVELS FOR SALMONIDS
BERRYFIELDS BENEFITTING FROM POLLINATORS FLOURISHING IN BEAVER HABITAT
NATURAL FLOOD DEFENCE
WATER LOVING TREES
THRIVING IN BEAVER WETLAND
WIDE RIPARIAN EDGE
BEAVER POOLS, RICH BIODIVERSITY
INCLUDING FISH HABITAT
ADULT SALMON JUMPING A BEAVER DAM!
POLYTUNNELS
PROVIDING RANGE OF VEG/FRUIT
ORCHARD
TREE DROWNED BY BEAVER POOL
CREATES IMPORTANT HABITAT
REJUVENATION OF LONG DISAPPEARED WETLANDS
BEAVER POOLS
HOLDING WATER IN TIMES OF DROUGHT,
BENEFITTING FISH & PROVIDING A RESOURCE
FOR IRRIGATION.
MARKET GARDEN
BEAVER FELLED TREES
CREATING STANDING & LYING DEADWOOD
& COARSE WOODY DEBRIS IN WATER AS
HABITAT FOR YOUNG FISH


THANK YOU
AND GOODBYE