

Haida Gwaii Herring: Historical Trends and Sustainability Concerns



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Outline



- Historical Haida Gwaii fisheries
- Traditional knowledge and comanagement agreement
- Abundance, spatial, social and ecosystem changes
- Haida sustainability concerns and policy issues
- Summary

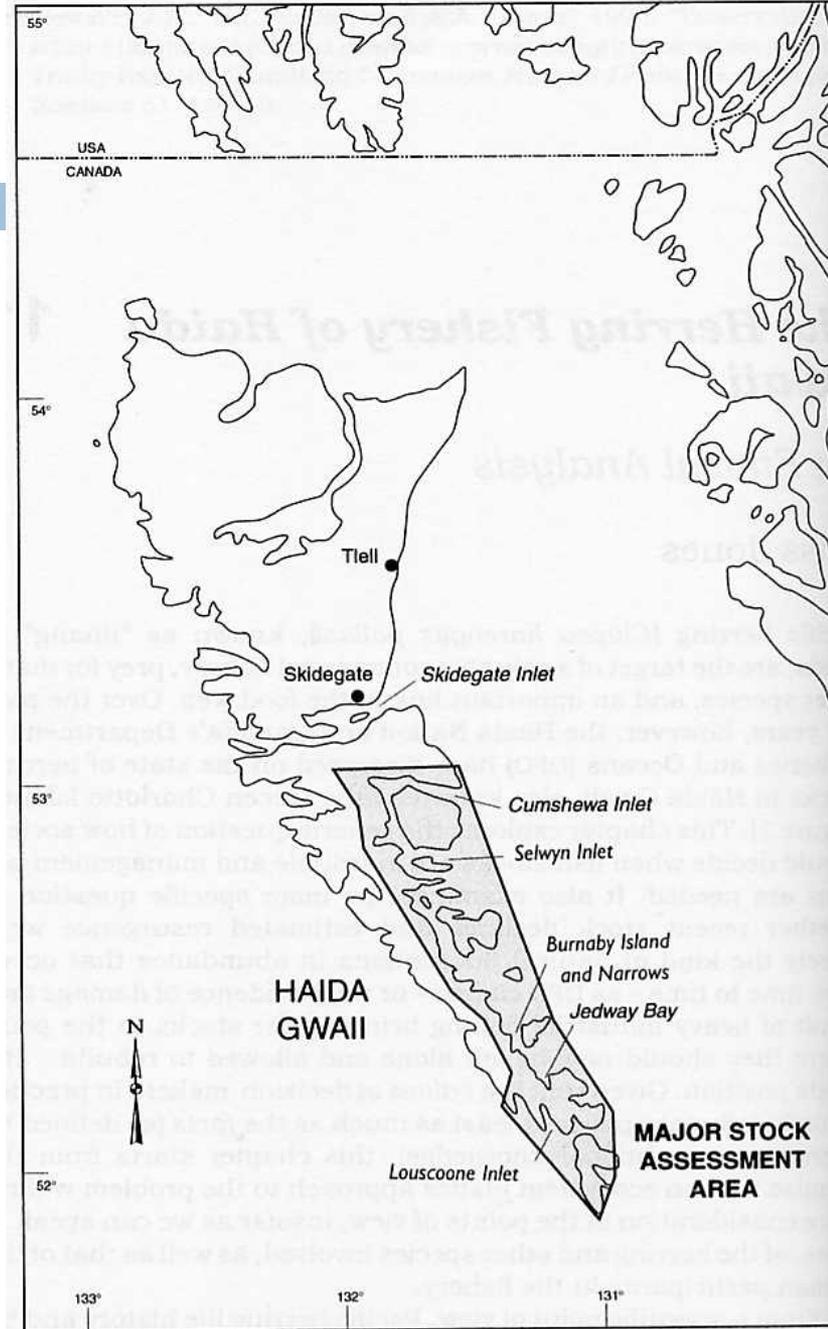
Haida Traditional Fisheries

- Spawn-on-kelp – *k'aaw*
- Spawn-on-branches
- Bait
- Oil



Industrial Fisheries

- Dry salt fishery
- Reduction fisheries
- Roe herring fishery including sac roe and spawn-on-kelp



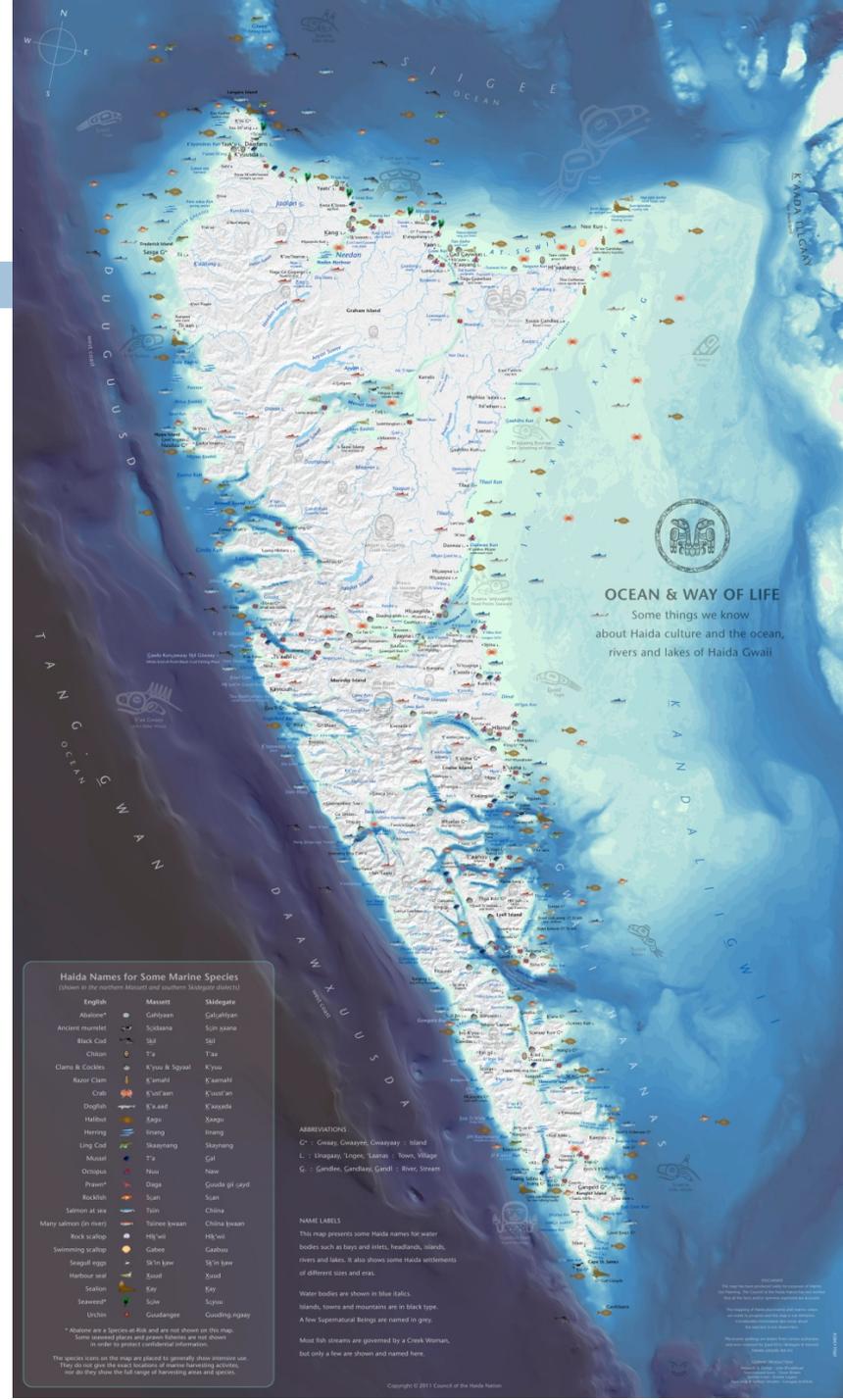
Haida Traditional Knowledge work

- 1998 herring interviews
- 2011 Haida Marine Traditional Knowledge (HMTK) Study

See:

1. Jones 2000. The herring fishery of: Haida Gwaii: an ethical analysis. In *Just Fish*, ISER Books.

2. HMTK Study participants, J. Winbourne and HOTT 2011. Volumes 1, 2, 3. http://www.haidanation.ca/Pages/programs/marine_planning/resources.html

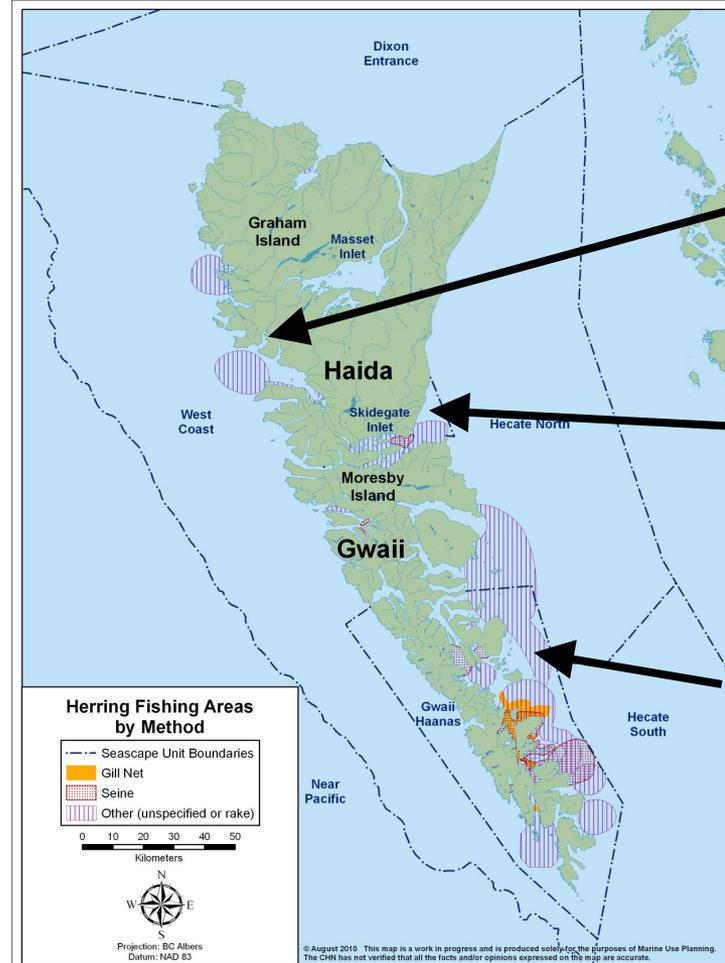
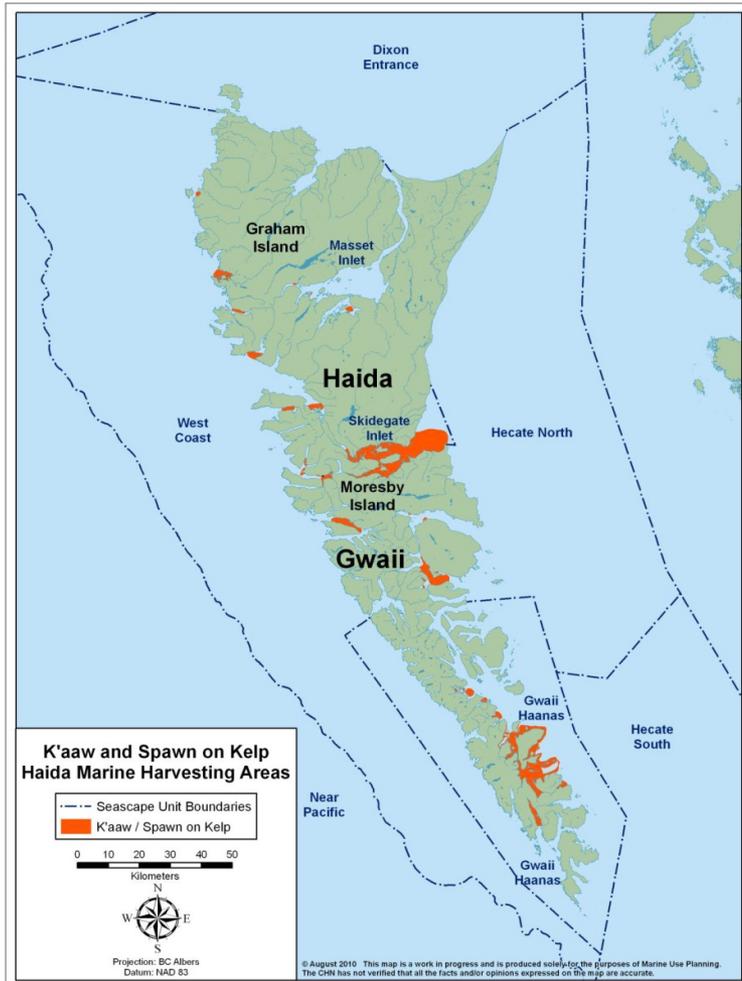


HMTK study: details

- 3 year study with two phases
- 48 short interviews (1-6 hr each); 4 oral history interviews (8-15 hr each); 54 participants (7 women and 47 men); ages 29 to 95 (62 average)
- Confidential database with 120 hours of transcribed audio and video recording and 300 completed maps
- Report with summary chapter on herring as focal species for marine planning



Herring fishing locations



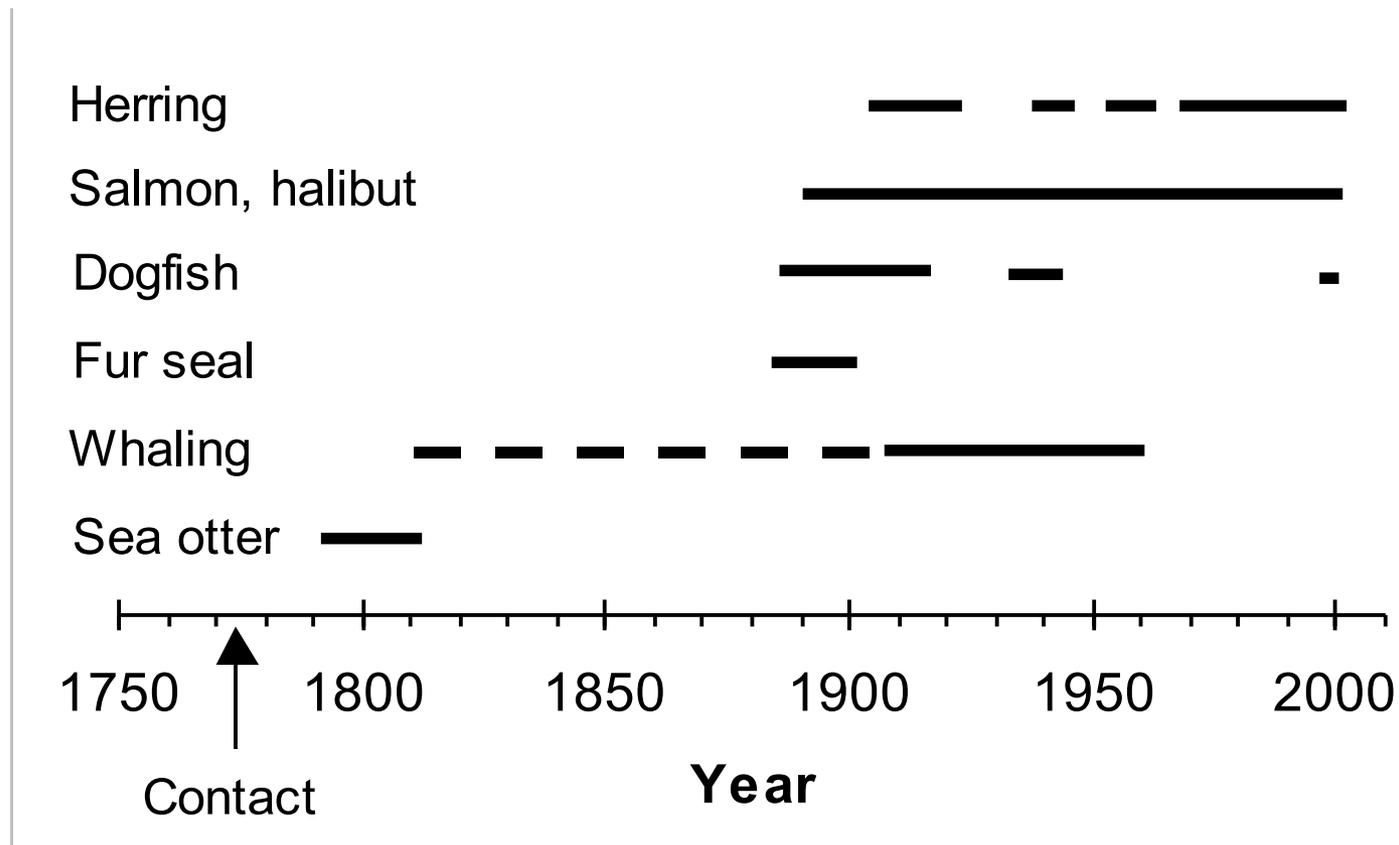
Area 2 West

Skidegate Inlet

Haida Gwaii Major Stock Area

Source: HMTK Study

Major Haida Gwaii fisheries



Comanagement in Gwaii Haanas

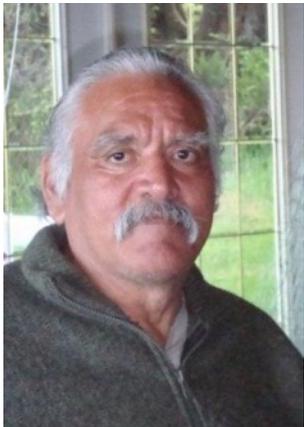


- **1993** – *Gwaii Haanas Agreement* establishes Archipelago Management Board
- **2010** – Marine area designated as National Marine Conservation Area after concluding Marine Agreement and Interim Management Plan
- Commits to developing cooperative ecosystem objectives and management approaches for fisheries including herring

Abundance changes



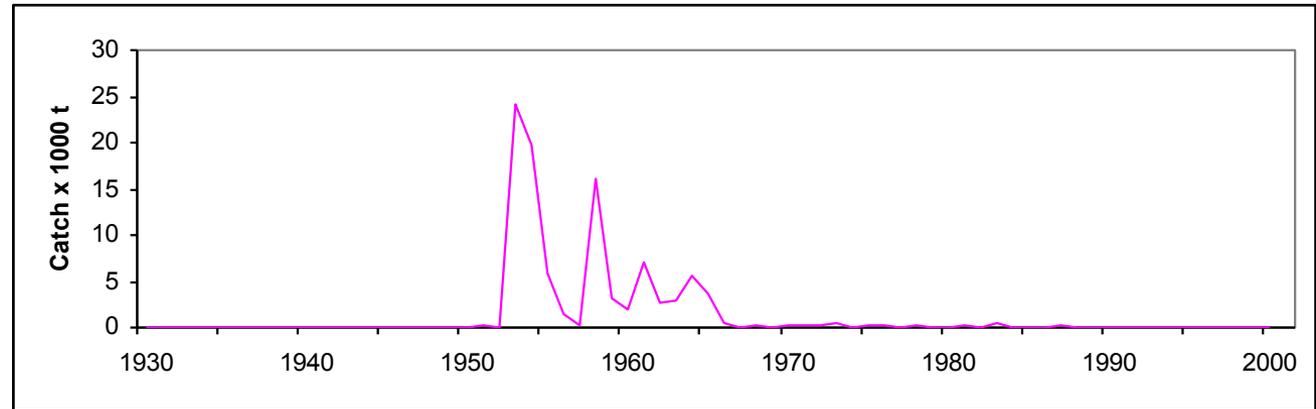
“There used to be big spawns.....- as far as you could see.. I know that there were millions of tons of fish, because when they started moving through Burnaby Narrows it sounded like a big rainfall or something, at night time going through the Narrows. And then the sealions and the killerwhales right with them too. Hear the sealions roaring all night going through the Narrows after the herring.  When we go looking for k'aaw in the spring there's not nearly as much spawn (now). And a few sealions, maybe 20 or 30 sealions passing through.”
Percy Williams 1998



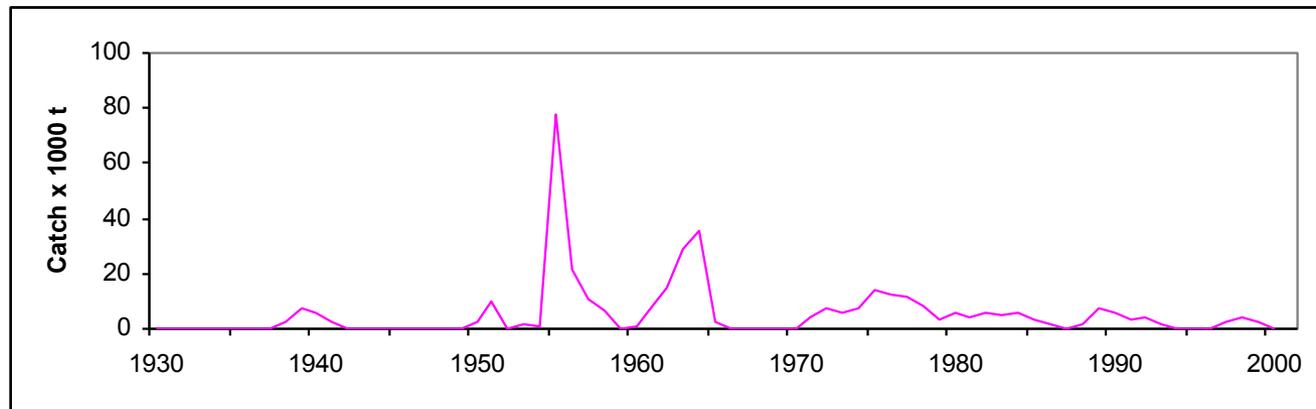
... one year before the closure (in 1995)... they fished every fish out of Rennell Sound and Inskip... to get their 1000 tons. And they didn't even get their 1000 tons. They quit at 800 tons because they couldn't find any more fish. ... The fishermen finally shut it down themselves; the Fisheries didn't. They just finally knew that ... if they catch every fish... they're not going to come back.
Vince Pearson 1998

Historical herring catch

Skidegate Inlet



Haida Gwaii
major stock
area



Abundance changes

- Skidegate Inlet - never recovered from reduction fisheries in 1950s and 60s
- No commercial abundance after roe fisheries in Naden Harbor and Cumshewa Inlet in 1980s
- Stocks on the west coast of Haida Gwaii depressed after overfishing in the 1990s



Spatial changes



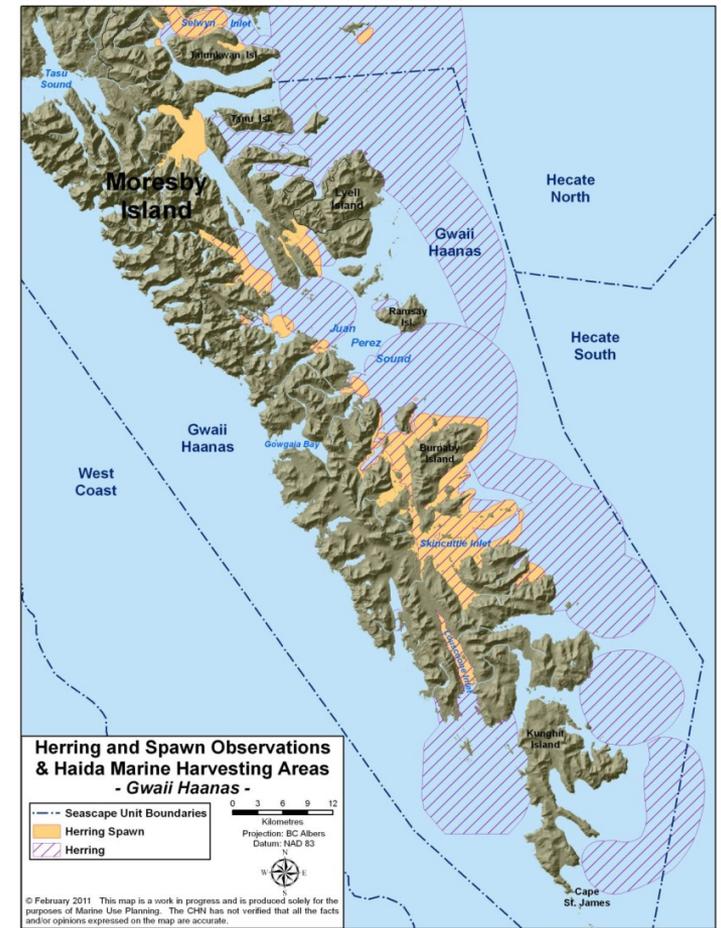
“But the herring are smart; they just spawn a little bit along right from Tlell—we used to hunt seals up there... when they’re chasing the herring, and it used to spawn a bit all along the beach, right from Tlell all the way up the inlet, right to Charlotte. And they still do that; they just spawn a bit on the eelgrass. That’s Mother’s Nature’s way of making them survive, I guess. So the Indians don’t get it. ... Yeah, that was in the sixties when we used to hunt seals up there.”

They're just like salmon, I think. [W] They may travel a long way when they are not spawning. But I feel strongly that they go back to the same area to spawn, where they were born. But fisheries (DFO) think otherwise. They manage the whole area like they spread out and spawn in that whole area. We all know that they just spawn a little bit here and a little bit there. Wipe out these and it's gone.

Percy Williams 1998

Spatial changes

- Poor traditional fishery catches at low stock abundance
- Loss of “resident” herring stocks



Social changes



... I would just go and pick k'aaw with the other women. There was... no men that picked when I first started in say '66... I did it for commercial purpose; we got say a dollar a pound for it, one time, and a dollar-twenty-five it went up to. It was hard work. You pulled by hand, rowed out, and then you had to dry it on the beach—spread it out on the beach and wait for the sun ...

Diane Brown 2008

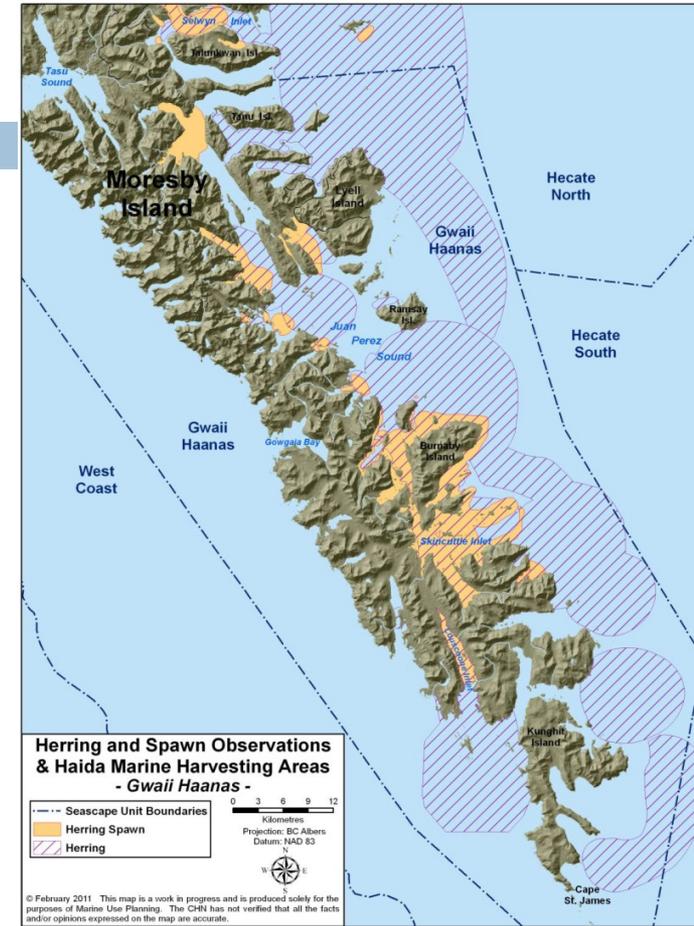


“... it happened ... by accident, that we started the roe on kelp in our bait pond. See I was fishing herring and we fished ... near the kelp because the herring comes into the kelp? And I caught a bunch of kelp; it got stuck in the net. While I was dumping the herring into the pond the kelp floated in. It was floating free in the pond? The herring start spawning on it.”

Roy Jones Sr. 2008

Social changes

- ❑ Reduced traditional fishery catches
- ❑ Economic impact of closure on spawn on kelp fisheries (employment, licence loss)
- ❑ Changing Japanese markets for herring spawn on kelp
- ❑ Haida commercial right to fish spawn on kelp not addressed

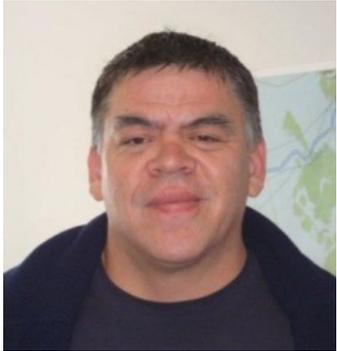


Ecosystem changes



“There used to be a lot of sea lions, even the... k’yaaluu, cormorants. Yeah. There used to be lots on both islands. In the evening you would hear them—oohwoowoo, ohwoowoo—you could hear them plain as that. You don’t see them now. No feed for them.”

Ernie Wilson 1998



“Lots [of whales] on the east coast...in ... March, April and May ... there’s just tons of them down there and... when the herring’s down there? I don’t know if ... it sucks them in there, but anywhere out around Ramsay and right down to Scudder Point – just whales all over on the outside. You don’t see many of them way in. You run offshore a little bit and you run into the big pods of them and they’re pretty busy too, thick.”

Conrad Collinson 2008

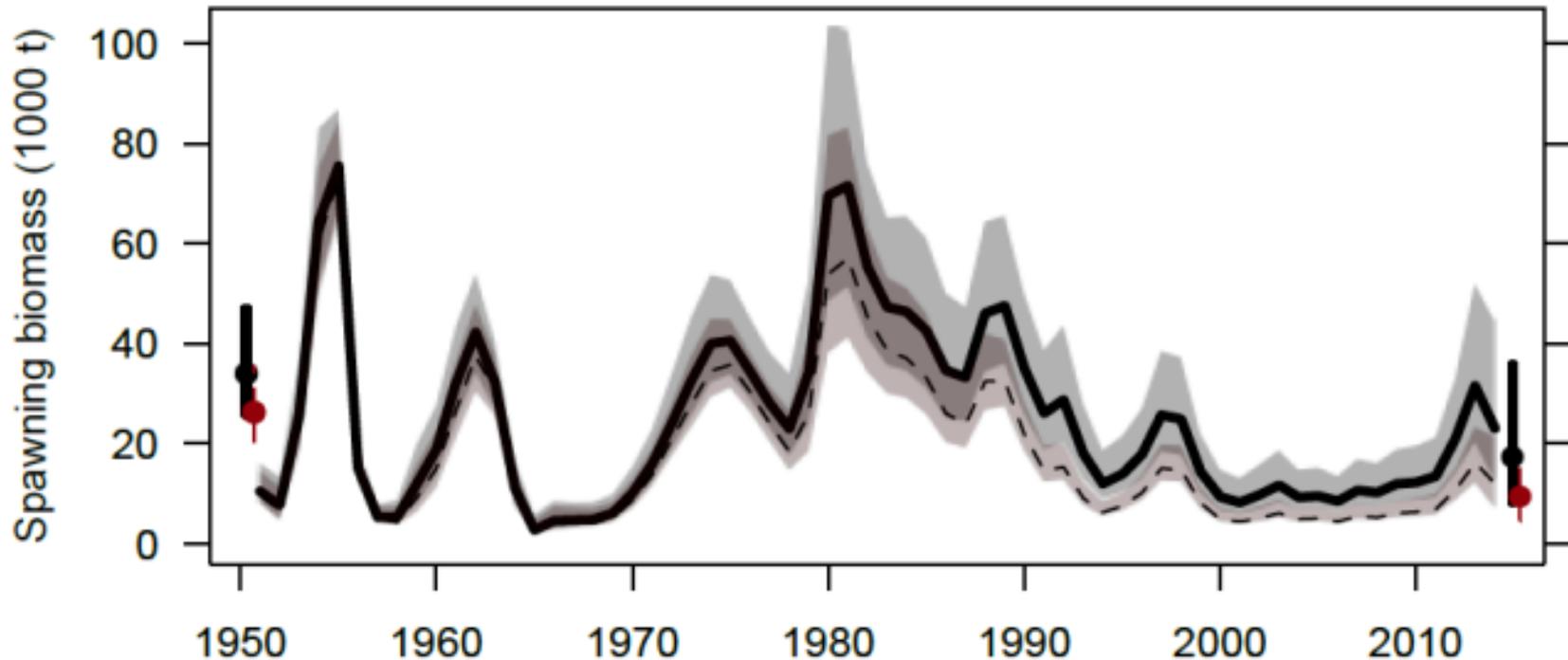
Ecosystem changes

- Humpback whale increases
- Seal and sea lion
- Herring haven't rebounded from fisheries as in the past
- Incomplete understanding of ecosystem relationships
- Gaps in knowledge of life history

Haida sustainability concerns

- Chronically low stock levels and optimistic forecasting
- Decreasing herring size-at-age
- Harvest policy hasn't resulted in stock rebuilding - roe fishery closure since 2004, spawn-on-kelp since 2005
- Poor traditional fishery catches at low stock abundance
- Overfishing of local spawning stocks
- Loss of commercial spawn on kelp fishery

Chronically low stock levels since mid-90s



From 2014 Stock Assessment (Cleary and Taylor)
for Base Case and Historical Management Procedure
N.B. CHN doesn't agree with DFO model but
graph is useful for showing general trends

DFO Modeling and Harvest policy

- Revised model adopted in 2010 results in doubling of forecasts
- Coastwide harvest policy of 20% harvest rate and cutoff at 25% of equilibrium unfished biomass
- Choice of current policy was based on expectancy of closure once in twenty years
- DFO undertaking review of coastwide herring management framework over next 3-5 years

Need for Alternative Models and Harvest Policies

- Stock hasn't behaved as expected
- Traditional knowledge indicates that stock levels were higher in the past
- Recent ecosystem and productivity changes
- Incorporate Haida values and objectives
- Haida Gwaii is the smallest of the five major stocks and has most variable recruitment
- Alternative approaches supported by recent CSAP paper on reference points (Cox et al, in review)

Haida response to reopening Haida Gwaii fisheries

- Distrust of recent models and policies
- “Herring Storm” action in 1998 and 2002; court action in 2014 and 2015
- DFO announced rebuilding initiative in September 2013 with options for reopening
- Haida Gwaii herring fishery opened in 2014 but industry agreed not to fish
- Haida Gwaii herring fishery opened again in 2015; CHN injunction prevents fishery

Basis for 2015 Injunction

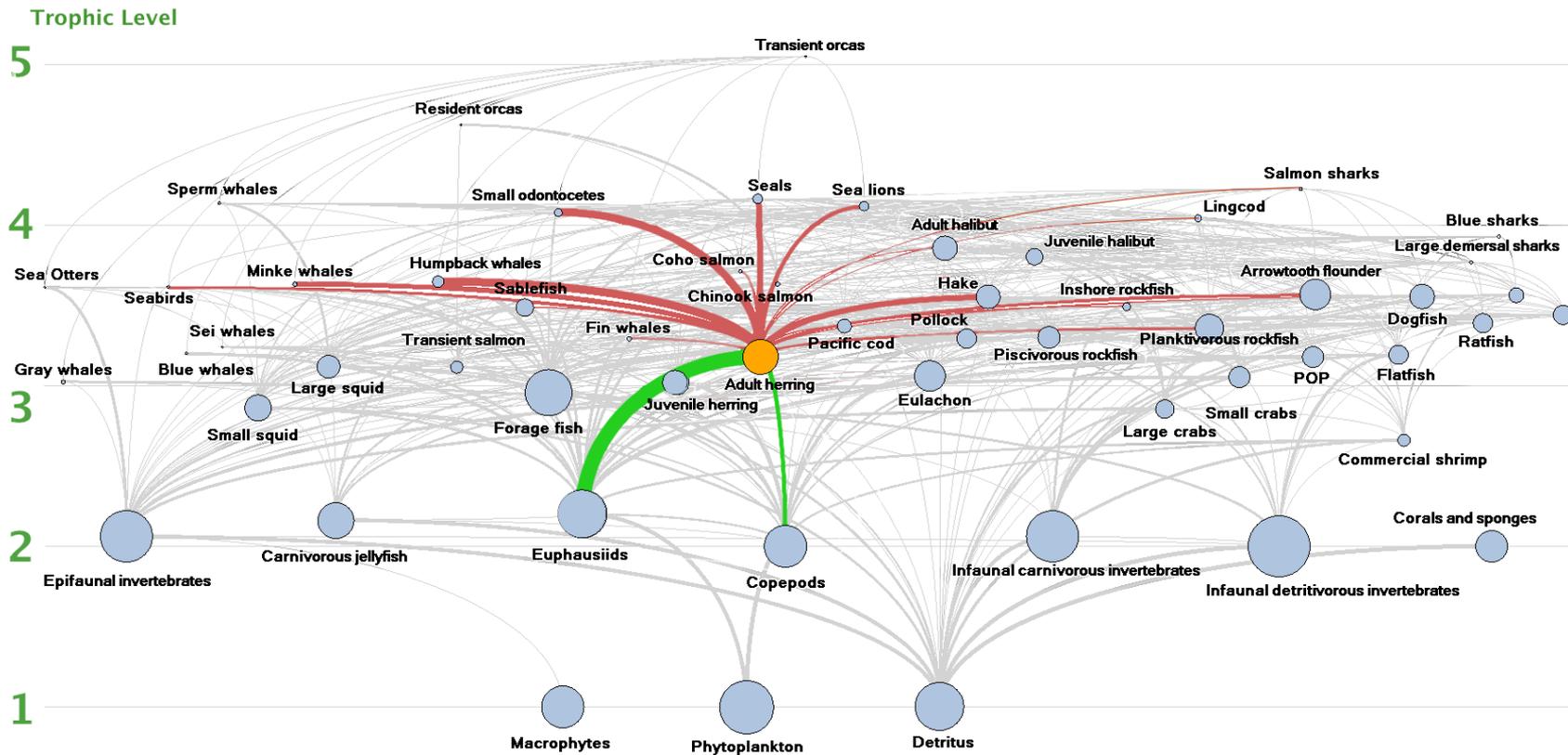
- Conservation issues:
 - ▣ Decline predicted from 2014 when managers recommended closure
 - ▣ High uncertainty in forecasts and risk of irreparable harm to herring
- Haida aboriginal title and rights
 - ▣ Obligations under Gwaii Haanas Agreement and lack of progress on ecological objectives
 - ▣ Harm to Archipelago Management Board relationship

Collaborative Research

- Haida and Heiltsuk are government partners in NSERC herring research project (4 universities) led by Tony Pitcher at UBC
- Ocean Tipping Points project with Gwaii Haanas case study led by Phil Levin at NOAA

Ecosystem Modeling by UBC Fisheries Centre

From: Tony Pitcher



Haida values and herring management by UBC Fisheries Centre

Haida Values ^a		Western Values ^b
1. <i>Yahguudang</i> or <i>Yakguudang</i>	Respect	Sanctity
2. <i>Giid tll'juus</i>	Balance - "The world is as sharp as the edge of a knife."	Welfare
3. <i>Gina waadluxan gud ad kwaagiida</i>	Interconnectedness ("Everything depends on everything else.")	Autonomy
4. <i>Isda ad diigii isda</i>	Reciprocity (Giving and Receiving)	Justice
5. <i>Gina k'aadang.nga gii uu tl' k'anguudang</i>	Seeking Wise Counsel	Authority
6. <i>'Laa guu ga kanhllns</i>	Responsibility	Group Solidarity

From:
Mimi Lam

^aJones et al., Haida Marine Planning: First Nations as a Partner in Marine Conservation, E&S, 2010

^bGraham et al. Moral Foundation Theory, 2012; Inglehart et al. 2003

Summary of Issues

- ❑ Failure of stocks to rebuild despite closures & fishery restrictions
- ❑ Poor forecasting by stock assessment model and no rebuilding plan
- ❑ Need for alternative scenarios and approaches e.g. ecosystem models and research, finer stock structure, impacts of spawn on kelp vs sac roe fishery, variation in harvest and management policies
- ❑ Need to reconcile management and incorporate traditional knowledge into comanagement systems