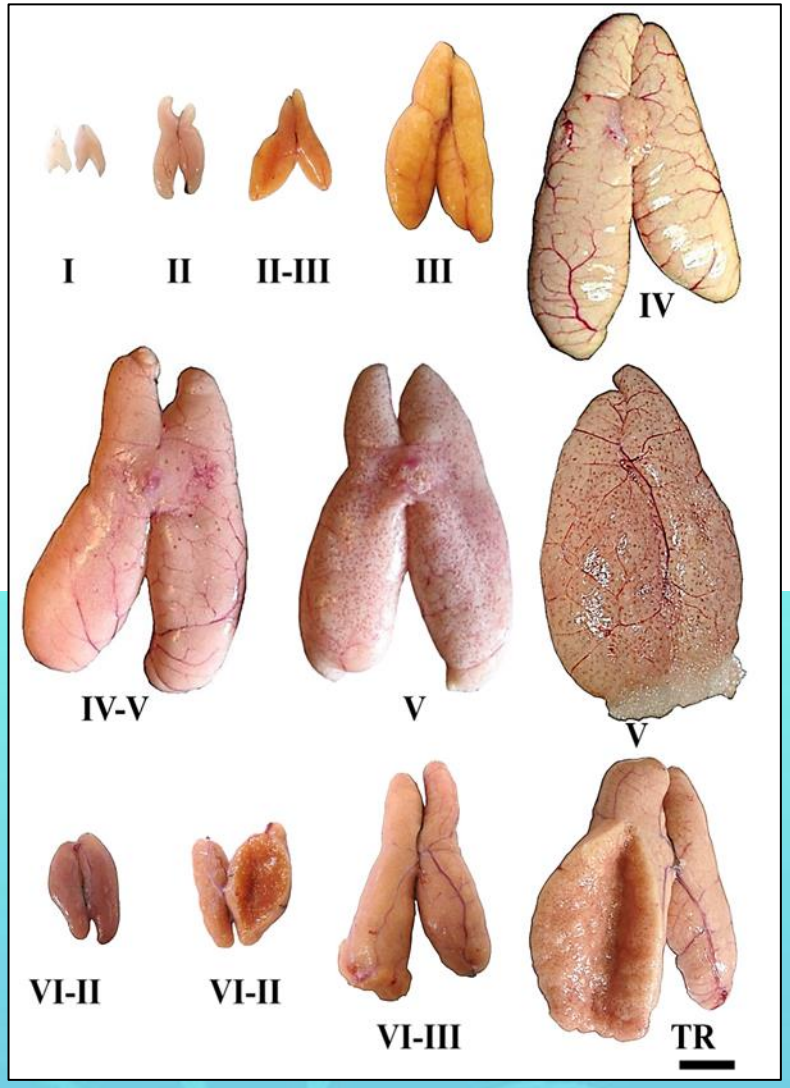
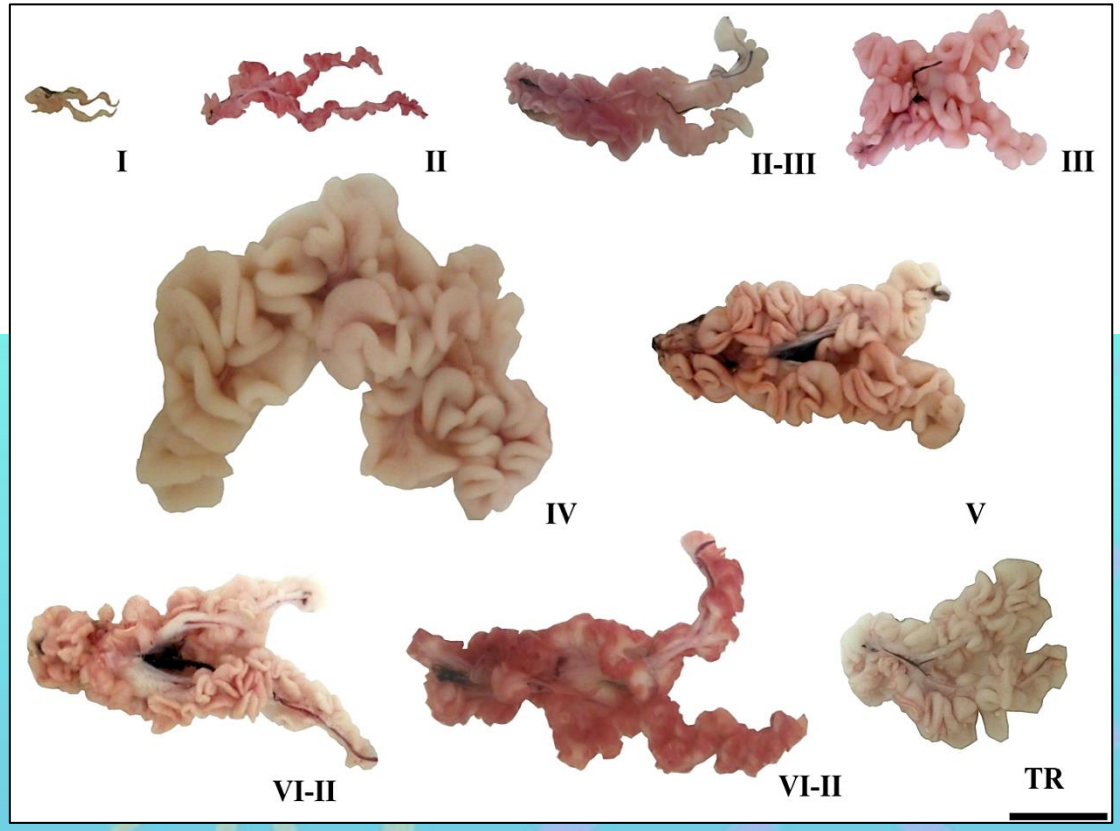
Russian Federal Research Institute of Fisheries and Oceanography
(VNIRO), Moscow, Russia

Gonadal abnormalities in walleye pollock *Theragra chalcogramma* (*Gadus chalcogrammus*)

Kristina Zhukova, Andrey M. Privalikhin





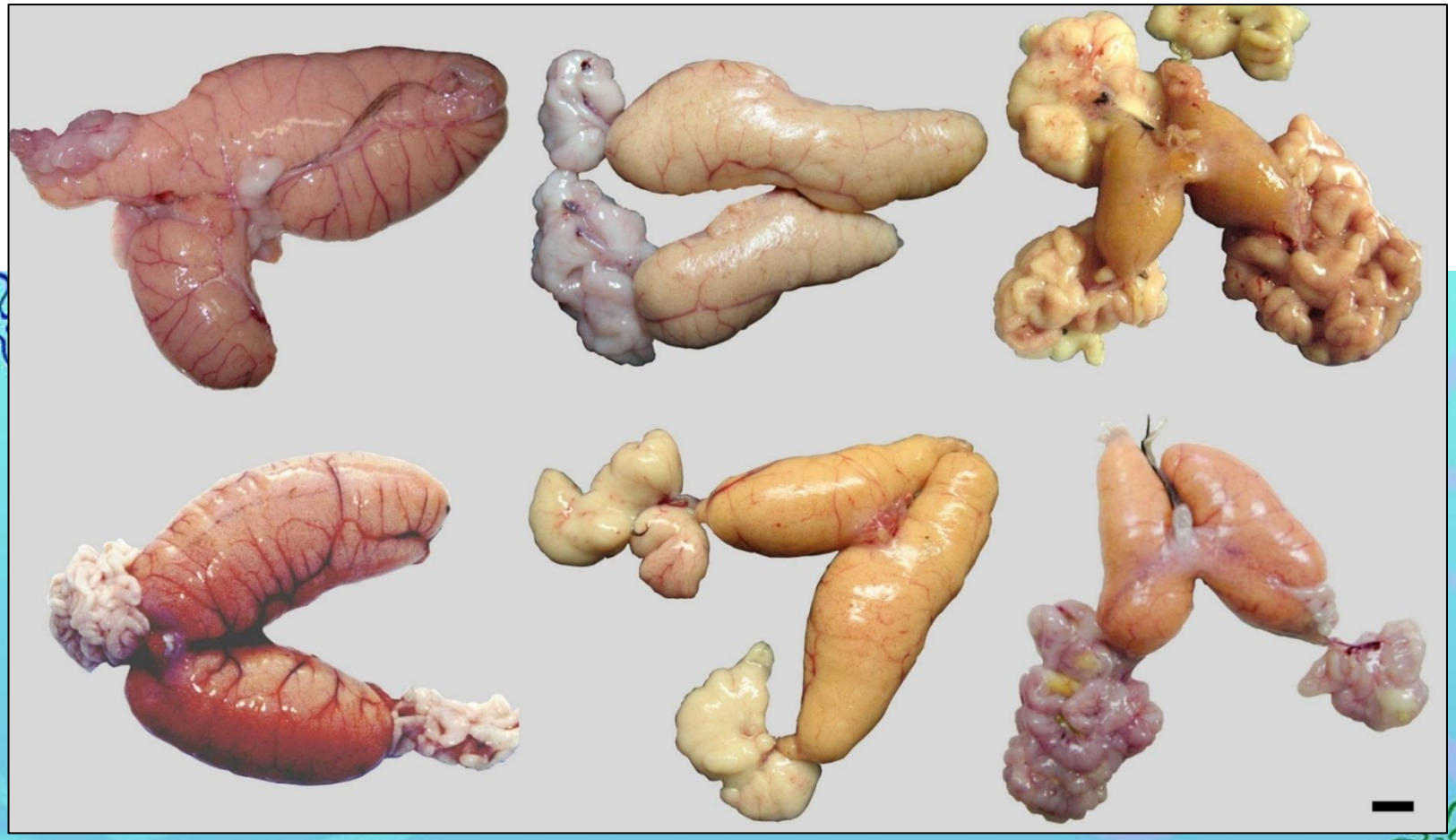
General view of walleye pollock <u>normal</u> ovaries and testes

Scale bar: 3 cm

Fish photo by A. Orlov

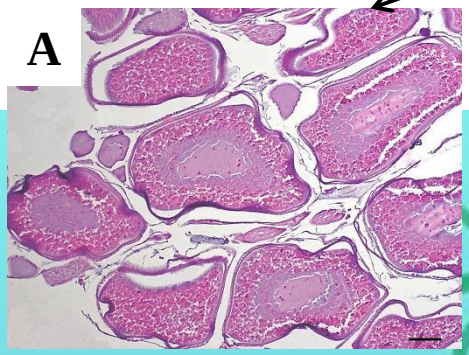
Intersexuality is the presence of both male and female reproductive tissue in the same gonad.

Gonochorism is the state of having just one of at least two distinct sexes in any one individual organism.

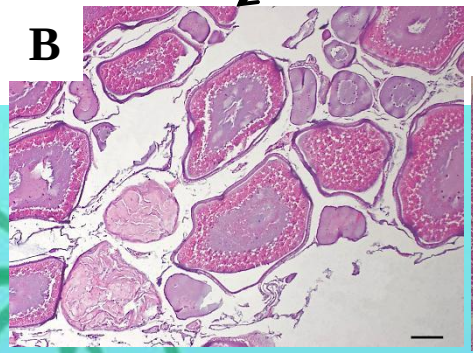


Macroscopic characteristics of *Theragra chalcogramma* <u>intersex</u> gonads.
Scale bars: 1 cm

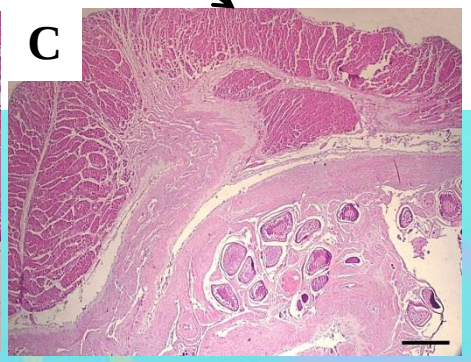
Developing ovatestes (A-D)



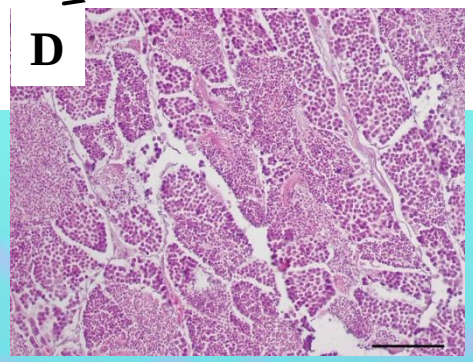
central part of ovaries



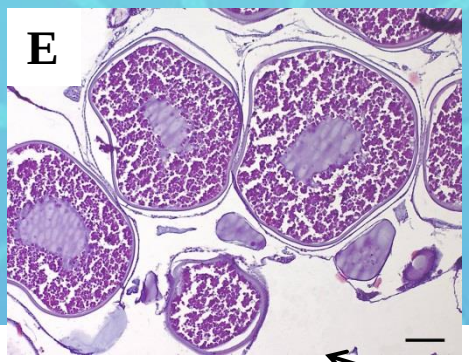
oocyte resorption area near testicular and ovarian tissue junctions

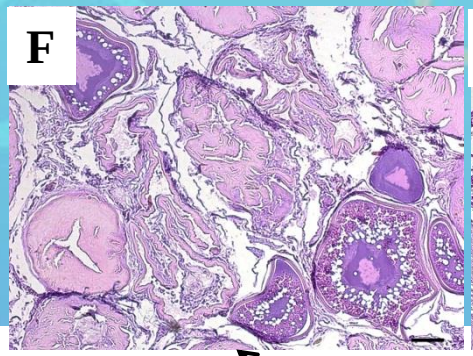


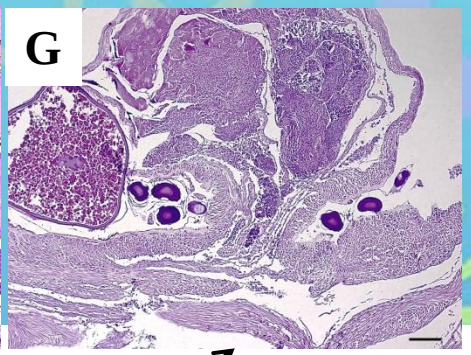
testes and ovaries junctions

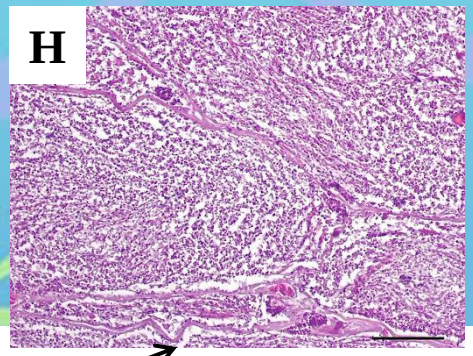


central part of testes





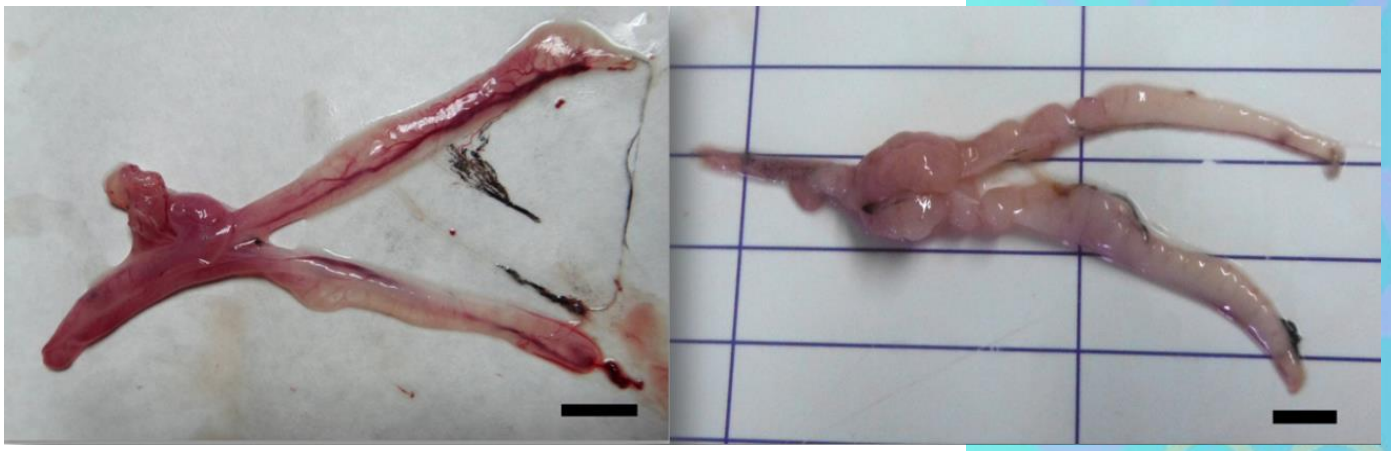




Spawning capable ovatestes (E-H)

Scale bars: 100 μm (A-C, E-G), 50 μm (D, H)

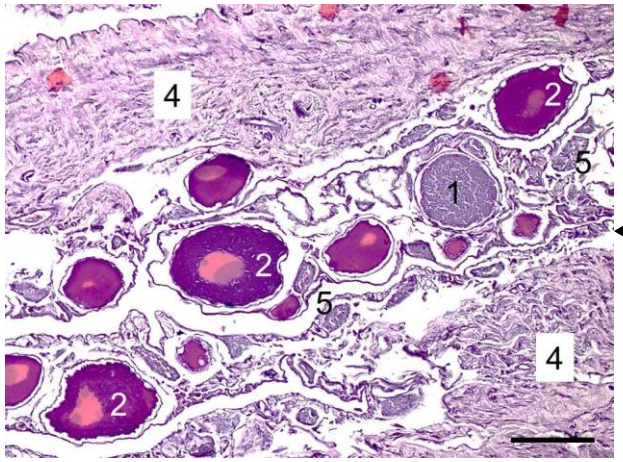
Filiform gonads



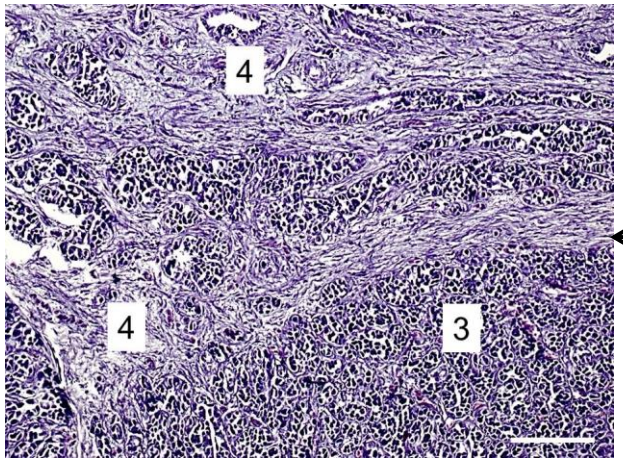
General view

Scale bars: 1 cm

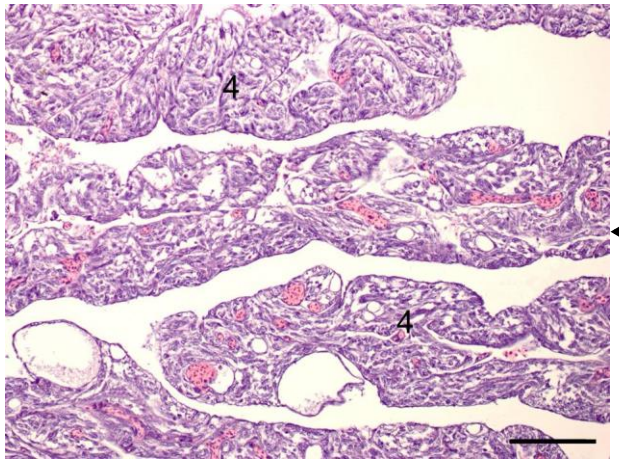
Filiform gonads



← **female-like**



← **male-like**



← **sterile**

1 – resorbing oocytes,

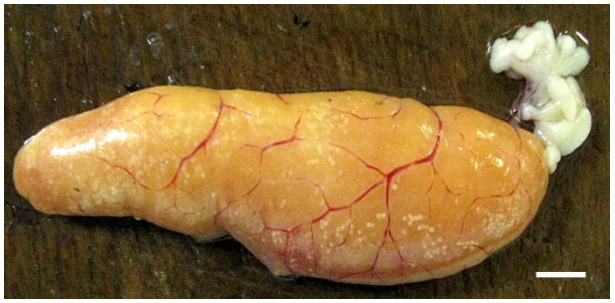
2 – previtellogenic oocytes,

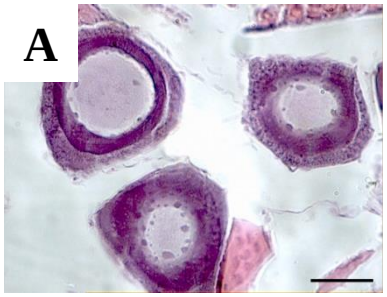
3 – spermatogonia,

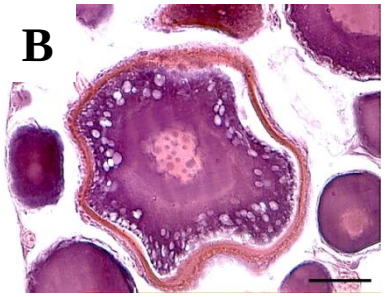
4 – connective tissue,

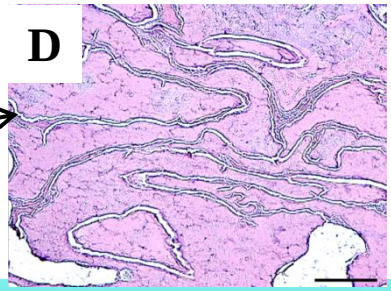
5 – post-ovulatory follicles.

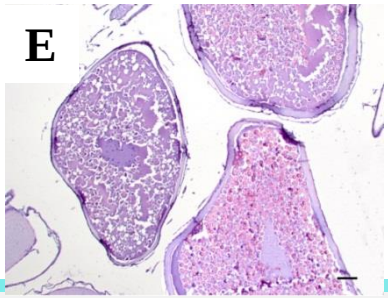
Scale bars: 100 μm

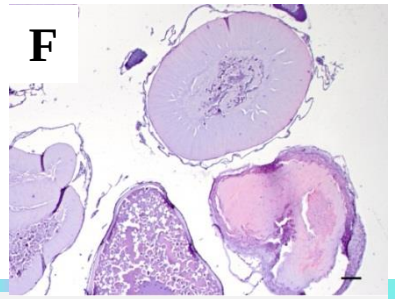






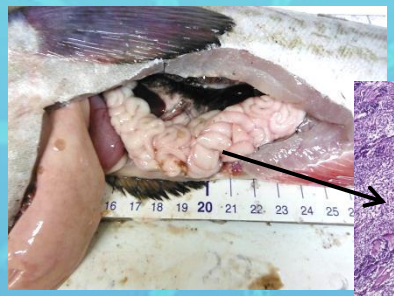


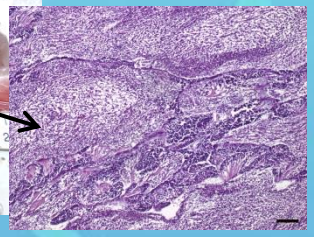




Atresia of oocytes at different stages of maturity in *T. chalcogramma*: A – early resorption of previtellogenetic oocytes; B − early phase of vacuolization oocytes resorption; C – atretic vitellogenetic oocyte; D – “tree-like structures of resorption”; E, F − resorption of vitellogenetic oocyte. Scale bars: 100 μm (B-F), 50 μm (A)

Total atresia of ovary and testes (fishes collected in Bering Sea in August)



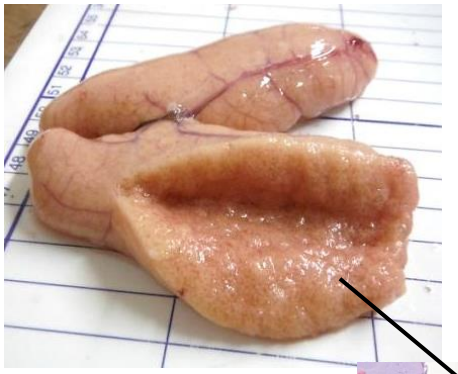


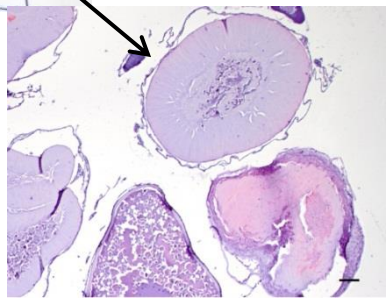
Number of females with atresia

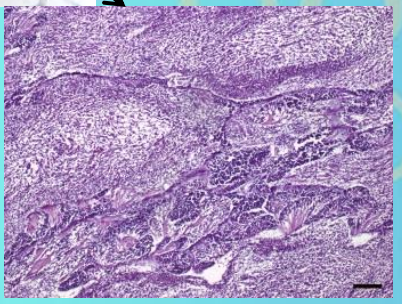
Area	Partial atresia (%)	Total atresia (%)
Bering Sea	23,4-61,9	0,9-11,1
Okhotsk Sea	43,4-58,2	0,2-14,6
The Peter the Great Gulf	29,0-33,8	4,6-12,6
Avacha Bay		2-2,4
the Gulf of Alaska		0,8

Total atresia

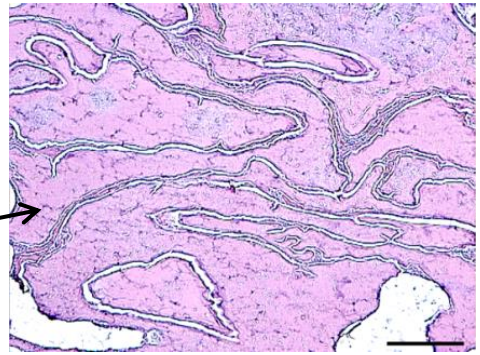
Total atresia of ovary and testes (fishes collected in Bering Sea in August)



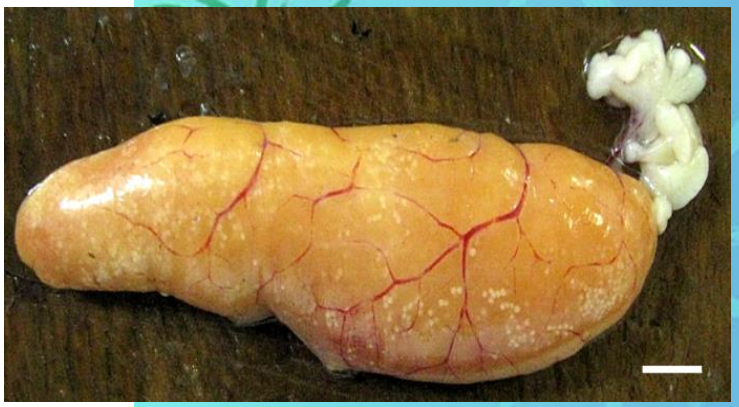




“tree-like structures of resorption”



Total atresia of ovatestes



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