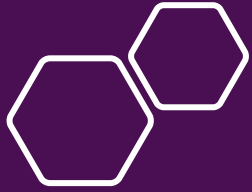
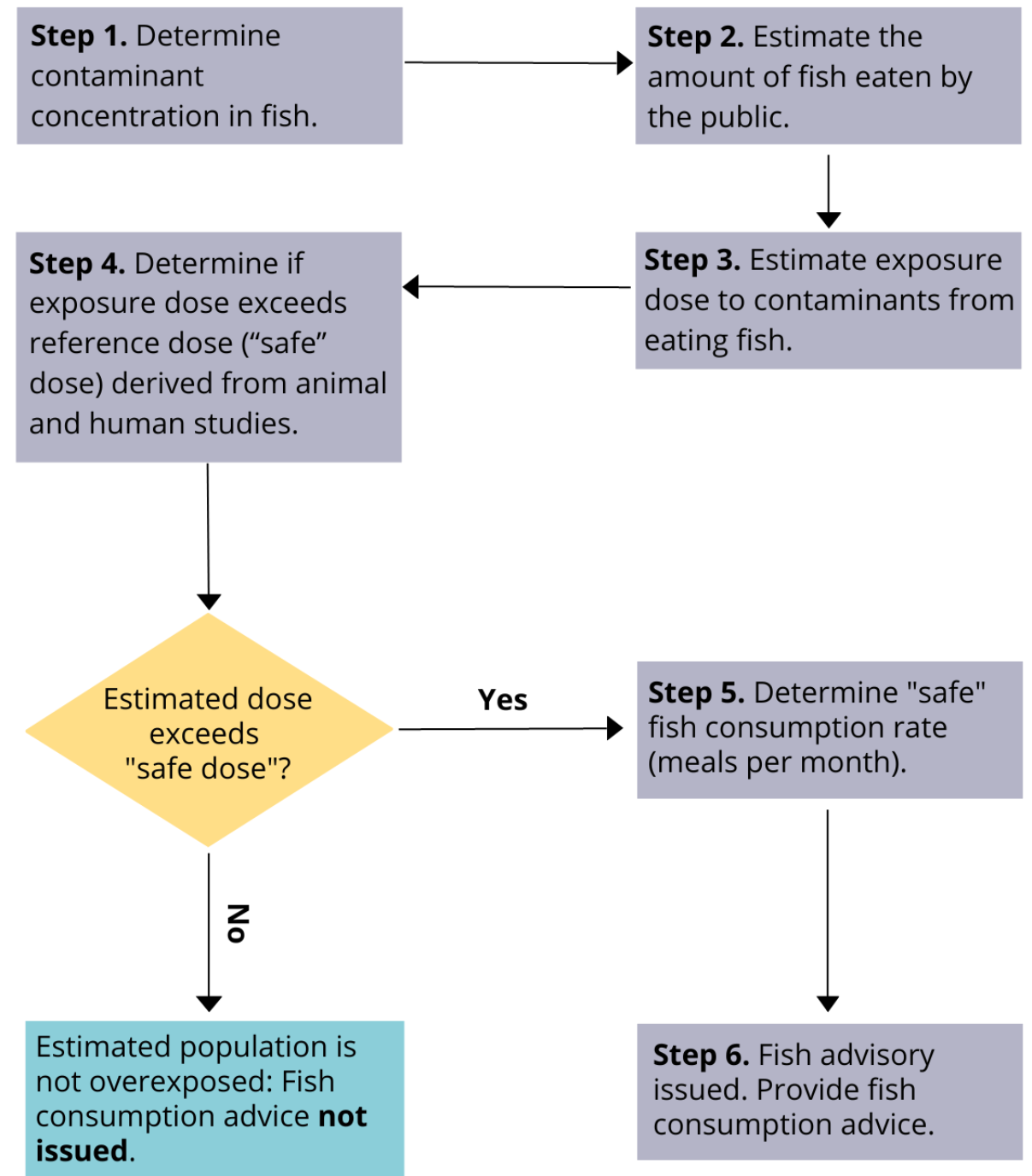


Fish and waterfowl advisory updates

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Exposure assessment steps



Fish Mercury Advisories

- Consumption rates are calculated for three target populations:
 - General public – Adults (Men > 16 yrs.; Women past childbearing age 50+)
 - Women of childbearing (WCB) age & children 6 – 16 yrs.
 - Pregnant women (PW) & children < 6 yrs.
- Risk assessment and consumption advisories are for non-cancer health effects.



Fish consumption advisories

Updated consumption advisories

Table 1. Updated consumption advisories for Utah water bodies based on 2021 sampling data.

| Waterbody | Species | Maximum meals per month | | |
|-------------------------|-------------|-------------------------|-------------------------------|---------------------------|
| | | General public | WCB*; children 6 – 16 yrs. | PW*; children < 6 yrs. |
| Big Sand Wash Reservoir | Walleye | 7 | 2 | 1 |
| New Castle Reservoir | Small wiper | 4 | 1 | Do not eat |
| Starvation reservoir | Walleye | 3 | 1 | Do not eat |
| Weber River near Morgan | Brown trout | 10 | 3 | 1 |

***Abbreviations:** WCB = women of childbearing age; PW = pregnant women

New consumption advisories

Table 2. New fish consumption advisories for Utah waterbodies based on 2021 sampling data.

| Waterbody | Species | Maximum meals per month | | |
|----------------------|-----------------|-------------------------|-------------------------------|---------------------------|
| | | General public | WCB*; children 6 – 16 yrs. | PW*; children < 6 yrs. |
| Newton Reservoir | Largemouth bass | 5 | 1 | Do not eat |
| Electric Lake | Cutthroat trout | 6 | 2 | Do not eat |
| Electric Lake | Tiger trout | 7 | 2 | 1 |
| Rockport Reservoir | Smallmouth bass | 4 | 1 | Do not eat |
| Cottonwood Reservoir | Black bullhead | 7 | 2 | 1 |
| Cottonwood Reservoir | Wiper | 8 | 2 | 1 |
| Pelican Lake | Lake bluegill | 8 | 2 | 1 |
| Pelican Lake | Largemouth bass | 6 | 2 | Do not eat |

*Abbreviations: WCB = women of childbearing age; PW = pregnant women

Communication and health education

Electric Lake Guide to eating fish safely



General public*

Meal size
8 oz

6 Maximum meals per month

or

7 Maximum meals per month



WCB**
Children 6-16 yrs

Meal size
8 oz

2 Maximum meals per month

or

2 Maximum meals per month



Pregnant women
Children <6 yrs

Meal size
4 oz

0 Maximum meals per month

or

1 Maximum meals per month

***General public**—Adults (Men over 16 yrs.; Women over 50 yrs.)
****WCB**—Women of childbearing age (16-50 yrs.)



Why is there a consumption advisory?

Some fish from Electric lake have high levels of mercury in them making them unsafe to eat in large amounts. Mercury is a heavy metal that can harm your health. Pregnant women and children under six are especially vulnerable to harmful effects of mercury.

How can I reduce my risk?

You can't remove heavy metals like mercury by any cooking or cleaning methods. Instead, follow the monthly meal recommendations on the left to safely eat fish from Electric lake.



Cutthroat trout

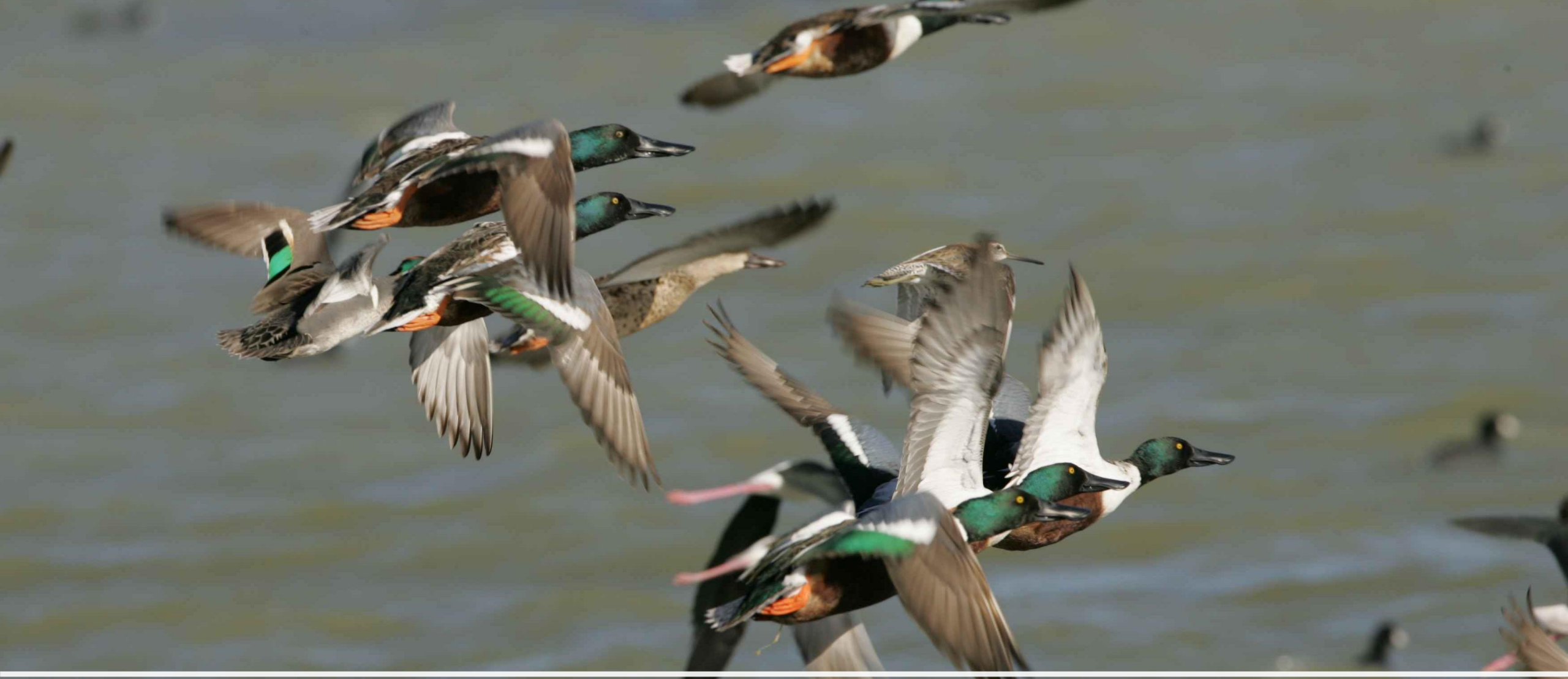


Tiger trout

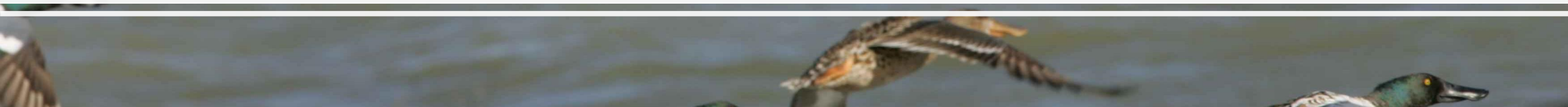
Contact info

Health & Human Services: EEP@utah.gov
Environmental Quality:
Natural Resources:

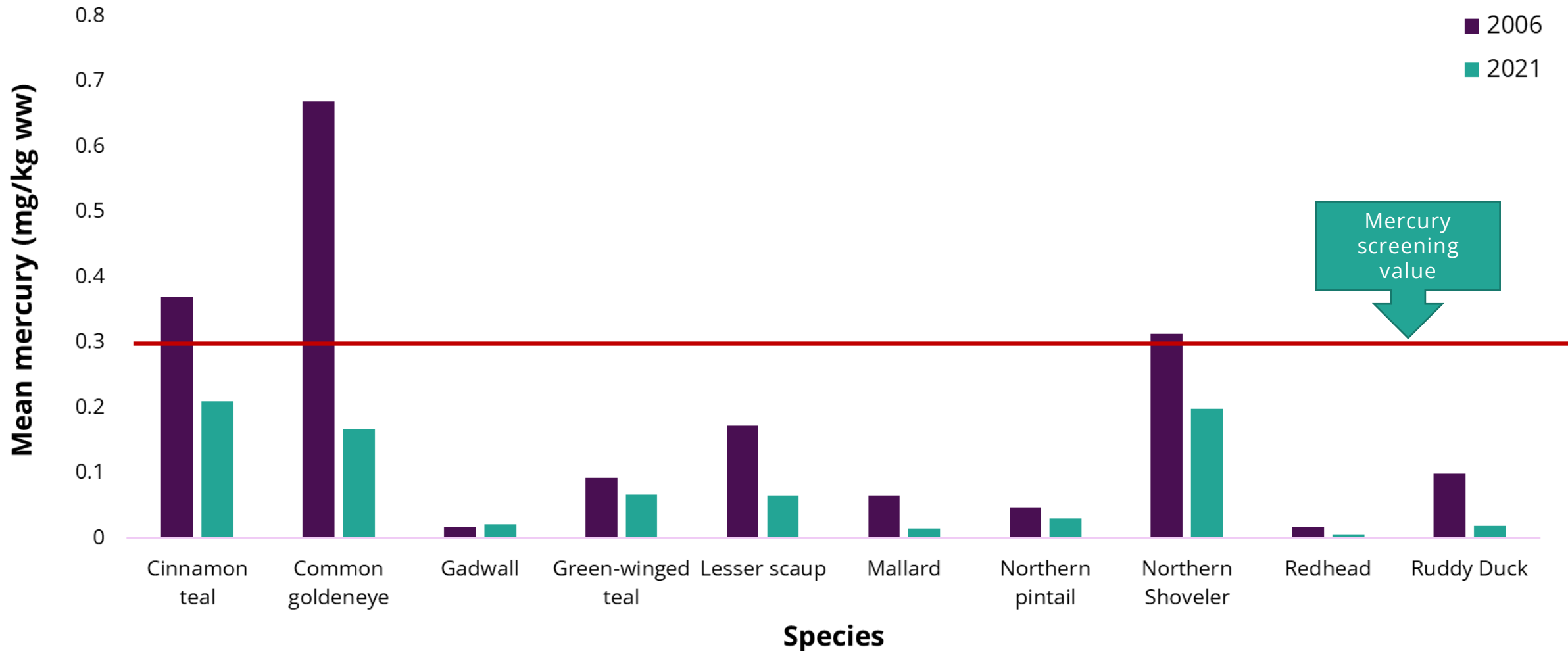




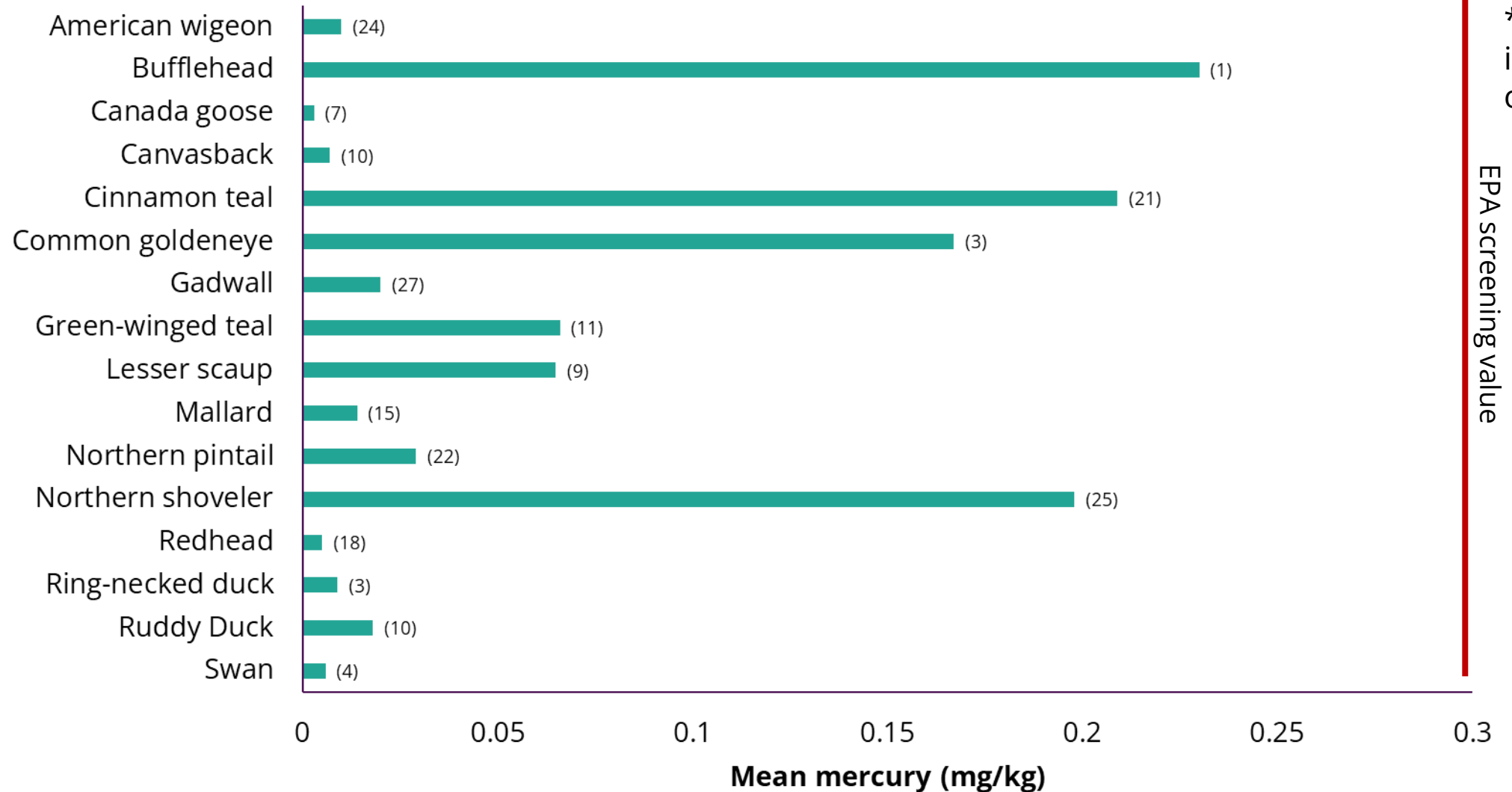
Great Salt Lake waterfowl advisories



2006 vs 2021 mercury levels in waterfowl from GSL






Mean mercury levels in waterfowl from GSL fall 2021





PFAS in fish and waterfowl

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- 
- What do we do when we find PFAS in Utah fish and waterfowl?
 - Four states have PFAS advisories for venison, but none for waterfowl.
 - MI testing in waterfowl, but no data available.
 - Most state fish advisories based on PFOS concentrations only.
 - PFOS most commonly found, usually in the highest concentrations.
- 

Screening value for PFOS in fish and waterfowl

ATSDR MRL =
2 ng/kg/day

RSC = 70%

$\frac{\text{Toxicity Value}}{\text{Consumption Rate}} \times \text{Relative Source Contribution} = \text{Screening Value}$



$\frac{32.4 \text{ g/day}}{80 \text{ kg}}$



$\geq \text{SV}$

Issue advisory

Screening value for PFOS in fish and waterfowl

$$\text{Screening Value} = \frac{MRL \times BW}{CR} \times RSC = \frac{2.0 \text{ ng-kg-day} \times 80 \text{ kg}}{32.4 \text{ g/day}} \times 0.7 = \mathbf{3.5 \text{ ng/g}}$$

Where,

- MRL = Minimal Risk Level (2.0 ng/kg/day)
- BW = Body weight in kilograms (80 kg)
- CR = Fish consumption rate in grams per day (g/day)
- RSC = Relative source contribution (0.7 unitless)



PFOS in tissue
w/w

Contact

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appletree.utah.gov/game-and-fish-advisories/

Mercury Advisories

- Consumption rate calculations:

- $CR_{mm} = \left(\frac{BW \times T_{ap}}{MS} \right) \times \frac{RfD}{C}$

- Where:

- CR_{mm} = maximum allowable fish consumption rate (meals/month)
- BW = mean body weight of the general population or sub-population of concern (kg)
 - 80 kg = Adult general public; WCB age & children 6 – 16 yrs.
 - 16 kg = PW; children < 6 yrs.
- T_{ap} = time average period (30.44 days per month)
- MS = meal size (0.277 kg/fish/meal for adults, 0.113 kg fish/meal for child & PW)
- RfD = reference dose (EPA) or minimal risk level (ATSDR)
- C = mean concentration of contaminant in fish species (mg/kg)

General Public: Adult

| Waterbody | Species | Mean (mg/kg) | Oral reference dose (mg/kg/day)* | Advisory (meals/month) |
|----------------------|------------------|--------------|----------------------------------|------------------------|
| Newton Reservoir | Large mouth bass | 0.605 | 0.0003 | 5 |
| Electric Lake | Cutthroat trout | 0.513 | 0.0003 | 6 |
| Electric Lake | Tiger trout | 0.45 | 0.0003 | 7 |
| Rockport Reservoir | Smallmouth bass | 0.699 | 0.0003 | 4 |
| Cottonwood Reservoir | Black bullhead | 0.445 | 0.0003 | 7 |
| Pelican Lake | Lake bluegill | 0.384 | 0.0003 | 8 |
| Pelican Lake | Largemouth bass | 0.476 | 0.0003 | 6 |

*From ATSDR's minimal risk level (MRL) for mercury.

At-risk population: Pregnant women; children < 6 yrs.

| Waterbody | Species | Mean (mg/kg) | Oral reference dose (mg/kg/day)* | Advisory (meals/month) |
|----------------------|------------------|--------------|----------------------------------|------------------------|
| Newton Reservoir | Large mouth bass | 0.605 | 0.0001 | 0 |
| Electric Lake | Cutthroat trout | 0.513 | 0.0001 | 0 |
| Electric Lake | Tiger trout | 0.45 | 0.0001 | 1 |
| Rockport Reservoir | Smallmouth bass | 0.699 | 0.0001 | 0 |
| Cottonwood Reservoir | Black bullhead | 0.445 | 0.0001 | 1 |
| Pelican Lake | Lake bluegill | 0.384 | 0.0001 | 1 |
| Pelican Lake | Largemouth bass | 0.476 | 0.0001 | 0 |

*From EPA's reference dose (RfD) for mercury.

At-risk population:

Women childbearing age; children 6 – 16 yrs.

| Waterbody | Species | Mean (mg/kg) | Oral reference dose (mg/kg/day)* | Advisory (meals/month) |
|----------------------|------------------|--------------|----------------------------------|------------------------|
| Newton Reservoir | Large mouth bass | 0.605 | 0.0001 | 1 |
| Electric Lake | Cutthroat trout | 0.513 | 0.0001 | 2 |
| Electric Lake | Tiger trout | 0.45 | 0.0001 | 2 |
| Rockport Reservoir | Smallmouth bass | 0.699 | 0.0001 | 1 |
| Cottonwood Reservoir | Black bullhead | 0.445 | 0.0001 | 2 |
| Pelican Lake | Lake bluegill | 0.384 | 0.0001 | 2 |
| Pelican Lake | Largemouth bass | 0.476 | 0.0001 | 2 |

*From EPA's reference dose (RfD) for mercury.