





THE PROBLEM

- Zoos use **many ad hoc processes** for nutrition and diet management (e.g., emails, whiteboards, Excel sheets, paper).

These have:

- **High labor costs** – too much time needed to make requested changes, prepare diets, and add up weekly orders.
- **Delays in extracting needed data** – it takes too much time to gather data when needed urgently (clinical cases, vendor contracts, budget changes)



WHY ZOO DIET NAVIGATOR?

Simplifies

commissary and diet management

Saves money and labor

Better for the animals





SAVES MONEY AND LABOR

- **Speed up diet prep** - One institution saved **30%** of labor switching from paper books to touchscreen.
- **Speed up diet change process** – change in one spot, all other reports immediately reflect it. One institution cut their **time in half** to make a diet change.





SIMPLIFIES COMMISSARY MANAGEMENT

- Easily gather accurate usage for **ordering and budgeting**
- Quickly update when **animals move to a new location**
- **Speedier analysis of diets** to address clinical cases.
- Faster and **more accurate diet changes**





BETTER FOR THE ANIMALS

- Prevent diet drift
- Compare diets to find outliers
- Quickly analyze diets and compare to nutrient recommendations



HOW DOES ZDN COMPARE TO OTHER TOOLS?

	ZDN	Tracks	Zootrition	ZIMS
Diet history	✓	✓	✗	✗
Diet analysis/ comparison with species recommendations	✓	✗	✓	✗
Nutrient analyses of lots	✓	✓	✗	✗
Food prep	Touchscreen, stickers, paper books	Touchscreen, stickers, paper books	Paper books	✗
Multiple diet card formats, including breakouts and groups	✓	✓	✗	✗
Support for centralized & decentralized commissaries, and bulk prep	✓	✓	✗	✗
Budget, ordering, and usage	✓	✗	✗	✗
Sustainability reports	✓	✗	✗	✗
Record feed intake	✗	✓	✗	✓
Works with ZIMS	✓	?	✗	✓
Tech support	Community, free developer office hours	Community and paid	Paid	Paid

LABOR COSTS

Small Zoo (150 diets, 2 stations): 80 - 160 hrs
Medium Zoo (300 diets, 4 stations): 132 – 260 hrs

Task	Who	Time/\$
Download, install, and configure software	Depending on security, either IT or Comm. Mgr/Nutritionist	2 hours (including watching installation videos) Software is free.
Data entry to set up zoo: areas, containers, feeds, etc.	Commissary Manager or Nutritionist	3-5 hours attending biweekly ZDN Office Hours & reading documentation 10-20 hours for setup
Initial diet entry	Commissary staff or volunteer familiar with operations	15-30 minutes per diet (depending on complexity of the diet; speeds up considerably as you get going) PLUS training for each person
(Optional) Touchscreen rollout – Train team (1-2 hours); Work side by side with staff at each station for first few days	Commissary Manager or Nutritionist	8-16 hrs/station
Communication - Regular emails and meetings with stakeholders	Commissary Manager or Nutritionist	10-20 hours



TECHNICAL DETAILS

- **Free, open-source** software – modify if you need
- Requires **Windows PC running Microsoft Office with Microsoft Access** and a **networked/share drive** to store the data
- Optional touchscreen usage requires Windows tablet with a touchscreen interface or a **touchscreen monitor**.
- **Security**
 - More secure than diet files on a network drive
 - Can be set to make regular backups locally or on Sharepoint
 - Less secure than a cloud-based system (tradeoff for being infinitely customizable)
- Cloud storage of data is possible – currently evaluating options





WHY ZOO DIET NAVIGATOR?

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Saves money and labor

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CREATING DIETS

Quickly add new foods

Put multiple animals on a single diet

Foods can be offered on **rotations** (every 2 weeks, etc.)

Adjustment: 100% 2 animals and enclosures

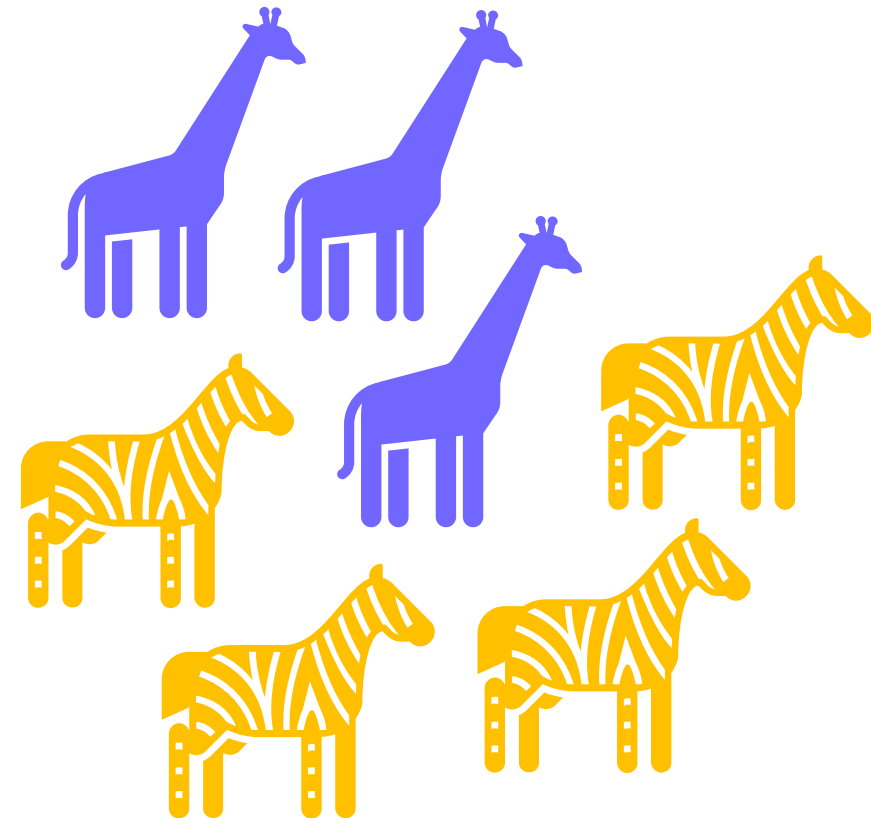
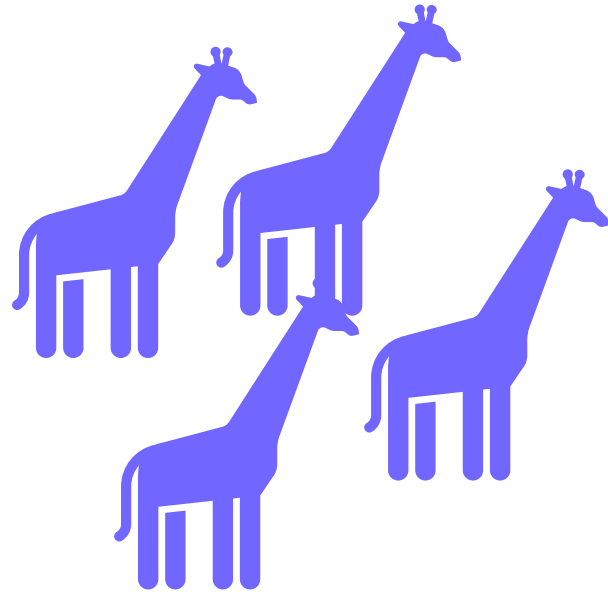
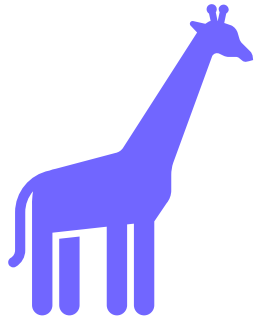
FOOD	IND	TOTAL		SU	M	T	W	R	F	S	PREP LOC	BIN	SORT	LINE NOTES	Every X wks	Wk of cycle	Next up wk of:	Feed Sched. <i>Beta</i>
MAZURI PARROT MAINTENANCE (56A8)	80.0	160.0	g	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Veggie Prep	1	1		1	1	07/14/24	<input type="checkbox"/>
APPLE	24.0	48.0	g	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Veggie Prep	2	2		1	1	07/14/24	<input type="checkbox"/>
BLUEBERRY, FROZEN	8.0	16.0	ea	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Veggie Prep	2	3		1	1	07/14/24	<input type="checkbox"/>
LETTUCE, GREEN-LEAF	10.0	20.0	g	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Veggie Prep	2	4		1	1	07/14/24	<input type="checkbox"/>
EGG, WHOLE, COOKED	1.0	2.0	g	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Meat Prep	3	19		2	1	07/21/24	<input type="checkbox"/>
*			g	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Veggie Prep	2	3					<input type="checkbox"/>

Add your own **units**

Different foods can be prepped in different **locations**



MANAGE DIETS FOR INDIVIDUALS, MULTIPLE ANIMALS, OR MIXED GROUPS



TOUCHSCREEN DIET PREP

The screenshot displays the Zoo Diet NaviGator interface for diet preparation. The main window is titled "1.1 breeding pair" and "Aviary 1 Bird House". It shows a list of ingredients for two bins:

Bin	Quantity	Weight	Item
Bin 1	Small bag		
	160 g	160	MAZURI PARROT MAINTENANCE (56A8)
Bin 2	100 ml container		
	16 ea		BLUEBERRY, FROZEN
	20 g	20	LETTUCE, GREEN-LEAF

Prep notes include "No avocados" and "Add extra love on Tuesdays". A history log shows updates and diet changes. The bottom navigation bar includes buttons for Home, Full Diet Card, Refresh Data, Recipes, and navigation controls like "27", "PREV", and "NEXT".

- **Fast:** Saves up 20-30% on labor – only shows what is needed each day
- **Clean:** no more sticky books!

FLEXIBLE FORMATS

Dozens of different diet sheet formats to support all types of operations and animal groupings

Group Diet Plan
 Brindled wildebeest (Group)
 Wildebeest herd
 Hoofstock Barns
 Africa Hoofstock

SU	M	T	W	R	F	S
14,000	14,000	14,000	14,000	14,000	14,000	14,000
g MAZURI WH HI-FIBER CUBE (5V05)						
53,900	53,900	53,900	53,900	53,900	53,900	53,900
g HAY, TIMOTHY						

Diets in Group
 #17 Beest Herd #19 Catherine

Printed: 7/20/2024

Aquarium Prep
 Assembly Grid
 Week of 9/29/2024
 Blacktip reef shark
 Shark Group
 Marine Mammals
 Dolphin Trek

Diet Prep Notes
 Do not cut fish
 If no herring, substitute anchovy

	Su	M	T	W	R	F	Sa
HERRING, ATLANTIC (Large 9-12") (g)							
Galaxy	185	185	185	185	185	185	185
Nebula	100	100	100	100	100	100	100
Orion	100	100	100	100	100	100	100
Zolla	150	150	150	150	150	150	150
SHRIMP, LARGE, HEAD-ON (g)							
Galaxy	105		105		105		XS
	50		50		50		XS
	50		50		50		XS
	75		75		75		XS

Page 1 of 1
 Group #9007

Diet Plan
 Amazon, double yellow headed
 1.1 breeding pair
 Bird House
 Aviary 1

This diet card is for 2 animals.

Bin 1 Small bag						
SU	M	T	W	R	F	S
						160 g MAZURI PARROT MAINTENANCE (56A8)
Bin 2 100 ml container Blue lid						
M	W	F				
			48 g APPLE			
SU	T	R	S			
			16 ea BLUEBERRY, FROZEN			
SU	M	T	W	R	F	S
						20 g LETTUCE, GREEN-LEAF
Bin 3 100 ml container Red lid						
SU						
						2 g EGG, WHOLE, COOKED

Diet Prep Notes
No avocados
 Add extra love on Tuesdays

Recent History

Date	By	Notes
7/20/2024	HeidiB	updated names
7/20/2024	HeidiB	removed 34 animals
12/13/2023	JennW	updated diet
12/13/2023	HeidiB	5% decrease due to weight gain
11/11/2023	JennW	initial diet

Animals Included

ID	Name	Species
379391	Asa	Amazon, double yellow headed
934546	Carmella	Amazon, double yellow headed

Diet last modified: 7/20/2024 by Heidi Bessell
 Active Analyzed Printed: 7/20/2024
Diet #27
 Page 1 of 1

BUDGET REPORTS – BY FEED

Feeding Costs - by Food	\$25,338	\$9,248,264	\$3,427,119	160,560
	Cost Per Day	Cost Per Year	Previous Cost	Kg Per Year
SEAFOOD - FISH	\$333.78	\$121,829	\$57,696	2,228
CAPELIN	\$87.38	\$31,893	\$31,644	831
HERRING, ATLANTIC (Large 9-12")	\$72.92			320
SARDINE, CALIFORNIA	\$71.37			475
SMELT, LAKE	\$29.05			128
TROUT, RAINBOW (L 60-100g)	\$73.06			475
SEAFOOD - INVERT	\$47.10			40
CLAM, STRIP MEAT	\$31.65			183
SHRIMP, LARGE, HEAD-ON	\$15.45			57

- Data provides **estimated usage** – very useful when writing contracts with vendors
- **Compare costs** - past and current
- Compile **usage statistics** for media – how many tons of fish does the zoo buy each year?

BUDGET REPORTS – BY AREA

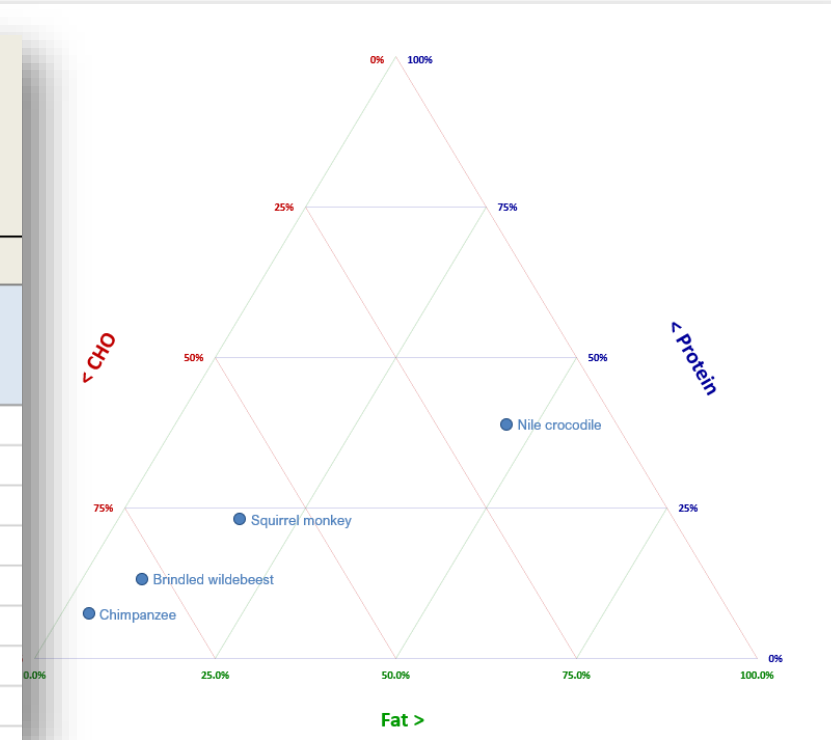
Feeding Costs - by Area		\$25,192	\$9,195,256	\$3,407,000	159,836
		Cost Per Day	Cost Per Year	Previous Cost	Kg Per Year
Main Park		\$8,291.75	\$3,026,487	\$1,076,942	53,365
Bird House	# animals	\$731	\$266,678	\$110,016	4,620
Aviary 1		\$29	\$10,590	\$4,167	206
27 Amazon, double yellow headed	2	\$13	\$4,619	\$3,029	73
9 Andean Cock-of-the Rock	2.5	\$16	\$5		
Aviary 2		\$688	\$251		
30 Andean Cock-of-the Rock	13	\$677	\$247		
26 Tanager, Blue-grey	5	\$11	\$4		
Bird Holding		\$13	\$4		
12 Eastern red-tailed hawk	2	\$13	\$4		

- **Quickly see costs** of feeding different areas
- **Estimate costs** for potential future species
- **Quickly see impact of diet changes**



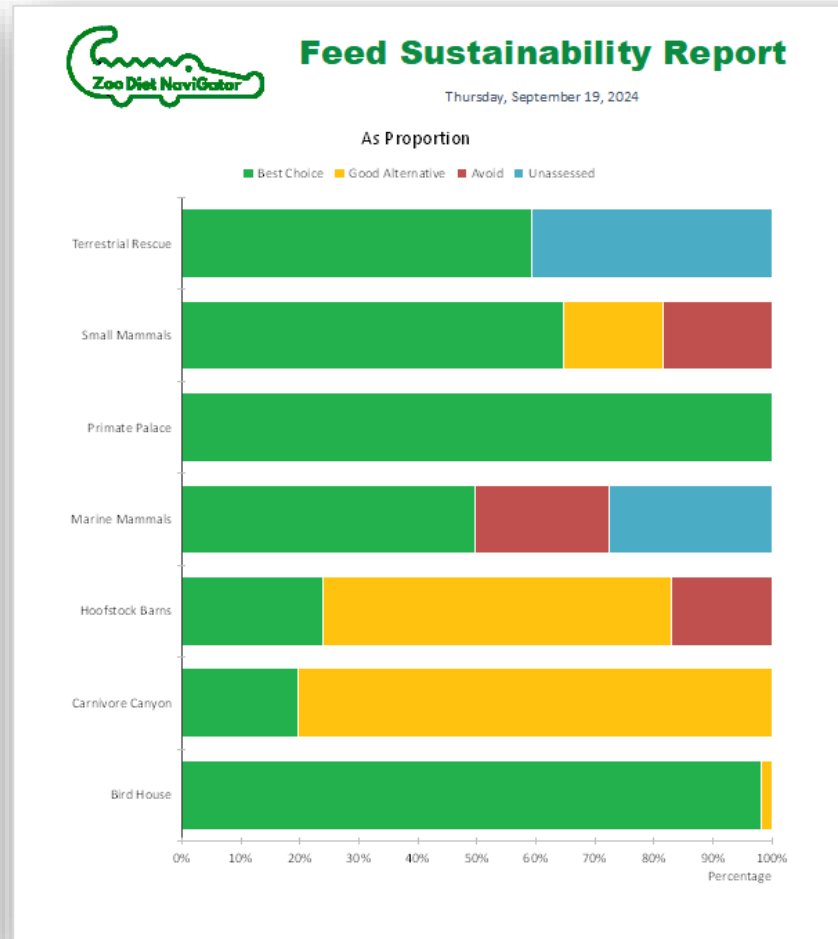
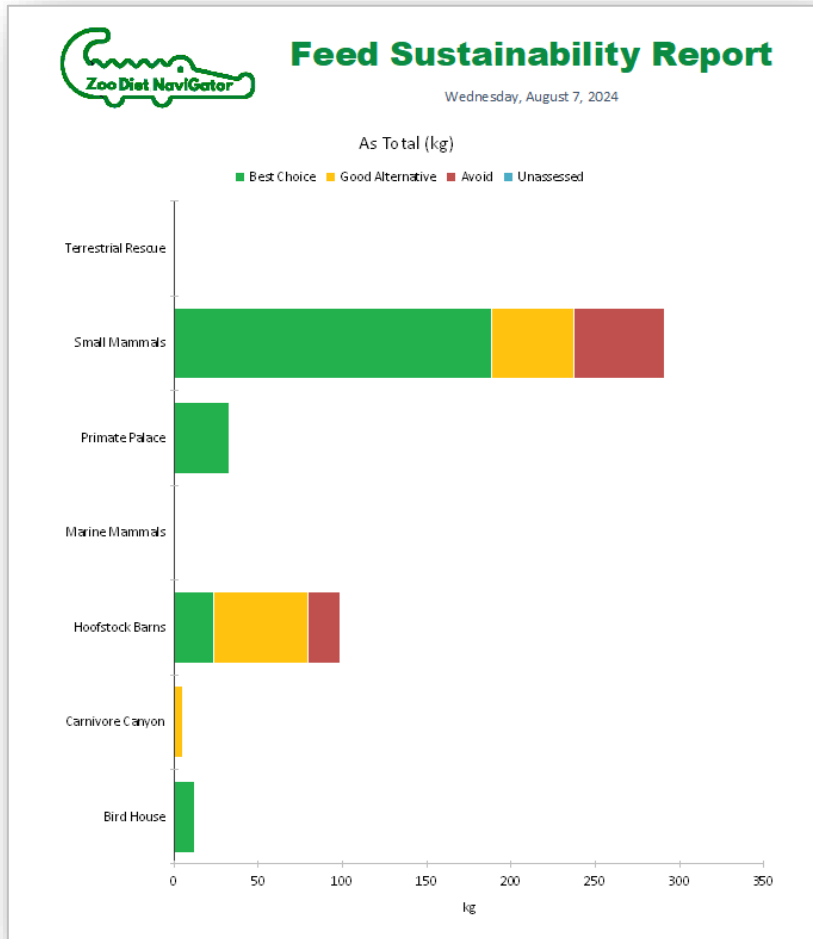
DIET COMPARISONS

		Name: Squirrel monkey	Brindled wildebeest	Nile crocodile	Chimpanzee
Dry Matter Basis		# Animals: 1	1	1	19
Nutrient	Unit				
As Fed	g	619	2,900	19	3,620
Dry Matter	g	183	2,658	6	362
Gross Energy	kcal	741	6,814	41	1,267
Dry Matter	%	100.00	100.00	100.00	100.00
Gross Energy	kcal/100g	405.49	256.40	637.00	350.00
Protein	%	23.39	8.48	61.80	6.50
Fat	%	7.66	2.39	32.60	1.50
Ash	%	5.26	7.49	9.80	5.50
Carbohydrate, by difference	%	58.58			89.50
NDF	%	20.27	56.68		18.43
ADF	%	8.17	37.92		16.37



Compare and visualize diets across species, locations, or seasons

SUSTAINABILITY REPORTS



Evaluate sustainability of your diets across your collection by quantity or proportion

RECIPES/IN-HOUSE MIXES

FRUIT, VARIETY (CHOPPED)

Makes 5,915 g

9/24/2024 - 9/30/2024

2,958 g	APRICOT	50%
1,479 g	BANANA	25%
1,479 g	BEET	25%

5,915 g

Reduce waste –
prepare exactly the
amount of recipes needed
each day



CUSTOMIZABLE & FLEXIBLE

BP - Foods On Diets within Area Report

Africa Hoofstock

		UNIT	SU	M	T	W	R	F	S	TOTAL
APPLE										
Delton (12345)	Southern white rhinoceros	g	0	100	0	100	0	100	0	300
BANANA										
Delton (12345)	Southern white rhinoceros	ea	0	1	0	1	0	1	0	3
HAY, COASTAL BERMUDAGRASS										
Delton (12345)	Southern white rhinoceros	g	6000	6000	6000	6000	6000	6000	6000	42000
Meriam	Southern white rhinoceros	g	5100	5100	5100	5100	5100	5100	5100	35700
Murphy	Southern white rhinoceros	g	5100	5100	5100	5100	5100	5100	5100	35700
HAY, TIMOTHY										
Beest Herd	Brindled wildebeest	g	52000	52000	52000	52000	52000	52000	52000	364000
Catherine	Brindled wildebeest	n	1000	1000	1000	1000	1000	1000	1000	10000

Easily create **your own queries and reports** to support your own operation. No coding needed.



FAST DIET CHANGES

Adjustment:  100%



Quickly increase/decrease diets

DietID	Delivery Loc	Species	Diet Name	Food
55	Nocturnal House	White stork	Monitor colony - breeding	MOUSE (30 g)
12	Bird Holding	Eastern red-tailed h	Eastern red-tailed hawk	MOUSE (30 g)
63	Tiger House	African elephant	Unicorn Diet	MOUSE (30 g)

When **ingredients or products change**, quickly change that item across **multiple diets at once**.



ACCESSIBLE



- Color-blind friendly
- Reduced visual noise
- Whitespace and fonts chosen to maximize readability
- Left- or right-handed touchscreen use



INTERNATIONAL & COLLABORATIVE



- Used by over **150 institutions** worldwide
- Works with **ZIMS**
- **Actively supported** by zoo and research communities
- Translatable into any language (currently Spanish and Chinese in progress)
- US Letter/A4 reports



