

How Does My Cat Work?

Feral Druid Reference



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Purpose

Provide a comprehensive reference for Feral abilities;

Allow readers to calculate the damage done by abilities cast in Cat form;

Promote basic understanding of how Feral works to help players make better gameplay decisions.

Conventions

All calculations apply to Level 120.

Numbers that modify abilities tend to be phrased as either percent increases or raw multipliers.

+ indicates a percent increase: +5% means multiply by 1.05 to apply modifier.

× indicates a multiplier: ×5% means multiply by 0.05 to apply modifier.

Sequential similar operators are grouped left to right: $10 / 5 / 2$ is equivalent to $(10 / 5) / 2$.

Personal Statistics

Called "stats" for short

Stats are calculated by summing the points on all relevant sources together, multiplying by any modifiers, and then applying a conversion factor.

The stats in the Character Information pane already have the modifiers listed below baked in, although some (such as racial modifiers to Stamina and Agility) are included in the base stat and others (such as the 5% bonus for wearing all leather) are included in the additional stat.

Feral Druid Aura

Purpose: Hidden aura used by Blizzard for tuning.

Baseline: 0

Modifiers: None

Affects both the direct and periodic damage and healing of:

Brutal Slash, Feral Frenzy, Ferocious Bite, Maim, Moonfire, Rake, Rip, Shred, Thrash

Also affects the direct and periodic healing of Regrowth.

General Aura: + 12%
Regrowth Aura: + 83%

Agility

Provides attack power.

Baseline: 1467

Modifiers:

- + 2 (Night Elf, Troll)
- 2 (Tauren, Highmountain Tauren)
- + 1 (Worgen)
- + 5% (If wearing all leather - Druid Armor Skills)

Conversion: 1:1 ratio to Attack Power.

Attack Power

Increases the damage and healing of all feral abilities.

Calculated as:

$$\text{Agility} + (\text{Weapon DPS} \times 6)$$

Note. Weapons bear a few different numbers but they are used to calculate each other:

$$\text{Weapon DPS} = \text{Average (Min Damage \& Max Damage)} / \text{Weapon Speed}$$

Stamina

Provides health.

Baseline: 1001

Modifiers:

- + 2 (Tauren, Highmountain Tauren)
- + 0 (Night Elf, Troll, Worgen)
- + 235 (Tauren - Endurance)

Conversion: Each point of stamina gives 20 health.

Critical Strike

Gives abilities a chance to do extra damage.

In PvE, critical strikes $\times 2$ damage

In PvP, critical strikes do $\times 1.5$ damage

Baseline: + 10%

Modifiers:

+ 2% damage and healing on critical strikes (Tauren - Brawn)

+1% during day (Night Elf- Touch of Elune)

+1% (Worgen - Viciousness)

Conversion: 72 points give +1% critical strike chance.

Mastery

Purpose: Increases the damage done by bleeds.

Baseline: + 8%

Modifiers:

$\times 2$ (Mastery: Razor Claws)

Conversion: 72 points give + 1% mastery.

Note: Feral's Mastery bonus applies to all sources, so that functionally baseline mastery is 16%, and 36 points give 1% mastery.

Haste

Purpose: Increases energy regeneration, melee swing rate, and bleed tick rate.

Baseline: + 0%

Modifiers:

+ 25% (Feral haste rating bonus - unnamed)

+ 1% at night (Night Elf - Touch of Elune)

Conversion: 68 points give +1% haste.

Versatility

Purpose: Increases all damage and healing done; reduces damage taken.

Baseline: + 0%

Modifiers:

+1% (Highmountain Tauren - Mountaineer)

Conversion:

Damage: 85 points give +1%.

Healing: 85 points give +1%.

Enemy Armor

Enemy armor is not a personal stat, but it affects some Feral abilities.

Dungeon and Raid Boss enemies have $3336 / (3336 + 7765)$ armor = 30.0513% of physical damage is mitigated.

Multiply abilities by 0.699487 to apply this damage reduction.

Ability Notes and Conventions

Rounding

When the calculated damage for an ability is not an integer, the game engine records the strikes as the integers both above and below that damage in ratios that average out to the calculated damage.

For example:

An ability's calculated damage is 547.3.

7/10 of the time, the ability does 547 damage.

3/10 of the time, it does 548 damage.

Secondary Stat Multipliers

The Secondary Stats (Critical Strike, Haste, Mastery, Versatility) are usually described as percentages for convenience. However, this is clunky to use in damage equations, so equations refer to the name of the stat and expect you to convert it accordingly: 30% haste converts to a 1.3 multiplier.

Range

Range is melee (5 yards) for all abilities unless otherwise mentioned.

Primal Fury

All abilities that give a combo point give an additional combo point if the immediate strike crits. Note that this is a maximum of one extra combo point, so an AoE ability that crits on 5 enemies still gives only 2 combo points.

General Cooldown

Nearly all abilities create a 1 second GCD when used. However, the GCD for Regrowth and Moonfire decreases with haste.

Critical Strike

Critical Strike affects all abilities (and some especially so) but I do not include it in the base damage equations. However, you should multiply by critical strike if you want to see the average damage of an ability cast many times.

Energy Regeneration

Feral energy regenerates at a base rate of 11 per second. This rate increases with haste:

New Energy Regeneration = Base Energy Regeneration \times Haste

Melee Swings

Melee swings are passive strikes of variable size that occur automatically whenever a druid is within melee range and facing a target they have engaged.

Modifiers:

+ 40% (Feral druid melee bonus while in Cat Form)

The average damage of melee swings is calculated:

$\text{Attack Power} \times \text{Versatility} \times \text{Cat Form Melee Bonus} \times \text{Enemy Armor} / 6$

Melee swings hit in a uniformly distributed range of damage values defined by this average damage plus or minus:

$\text{Weapon DPS} \times \text{Versatility} \times \text{Cat Form Melee Bonus} \times \text{Enemy Armor} / 5$

The base time between melee swings is one second. As haste increases, the time between swings decreases:

$\text{Time Between Melee Swings (seconds)} = 1 / \text{Haste}$

Direct Damage

Direct damage abilities are one-hit damage effects that are affected by enemy armor.

Modified by:

Attack Power
Critical Strike
Versatility
Ability Damage Multipliers
Combo Points (sometimes)
Energy (sometimes)
Enemy Armor

Shred

40 Energy. A direct damage ability that generates combo points.

Affected by:

$\times 0.380562$ Damage Multiplier
+ 20% damage against targets with at least one bleed applied to them.

- + (Damage on Trait) Azerite Power - Shredding Fury
 - + (Damage on Trait) Azerite Power - Wild Fleshrending
- When cast from stealth (or under Incarnation) hits half again as hard and crits twice as often.

Feral Aura \times Attack Power \times Versatility \times Shred Damage Multiplier \times Enemy Armor

Ferocious Bite

25 Energy. A direct damage ability that consumes combo points.

Affected by:

- \times 0.9828 Damage Multiplier
- \times (Combo Points / 5) - does less damage when cast with fewer combo points
- + (Additional Energy / 25) - Consumes up to 25 additional energy, for a total of 50 energy expended, to do +100% damage.
- + (Damage on Trait) Azerite Power - Raking Ferocity

$((\text{Attack Power} \times \text{Damage Multiplier}) + \text{Azerite Trait Damage}) \times \text{Feral Aura} \times \text{Versatility} \times (\text{combo points} / 5) \times (1 + (\text{Extra Energy} / 25)) \times \text{Enemy Armor}$

Maim

35 Energy; 20 second cooldown. A direct damage ability that consumes combo points and stuns the target.

Affected by:

- \times 0.062322 Damage Multiplier.
- \times Combo Points - Does additional damage and stuns for longer when consuming more combo points.
- + (Damage on Trait) Azerite Power - Iron Jaws (when it procs)

$((\text{Attack Power} \times \text{Damage Multiplier}) + \text{Azerite Trait Damage}) \times \text{Feral Aura} \times \text{Versatility} \times \text{Combo Points} \times \text{Enemy Armor}$

Stuns target for a number of seconds equal to Combo Points spent.

Swipe

35 Energy. A direct damage ability that generates combo points and hits all enemies within 8 yards.

Affected by:

× 0.25 Damage Multiplier

+ 20% Damage to targets with a bleed on them.

+ (Damage on Trait) Azerite Power - Wild Fleshrending

$((\text{Attack Power} \times \text{Damage Multiplier}) + \text{Azerite Trait Damage}) \times \text{Feral Aura} \times \text{Versatility} \times \text{Enemy Armor}$

Brutal Slash

25 Energy. A direct damage ability with three charges that generates combo points and hits all enemies within 8 yards.

Affected by:

× 0.6 Damage Multiplier

+ (Damage on Trait) Azerite Power - Wild Fleshrending

$((\text{Attack Power} \times \text{Damage Multiplier}) + \text{Azerite Trait Damage}) \times \text{Feral Aura} \times \text{Versatility} \times \text{Enemy Armor}$

Brutal Slash charges refresh after 8 / Haste seconds.

Bleeds

Bleeds are damage over time effects that ignore armor.

Modified by:

Attack Power

Critical Strike

Haste - increases the tick rate of bleeds

Mastery - increases the power of bleeds

Versatility

Ability Damage Multipliers

Combo Points (sometimes)

Bleeds have two parts:

A Direct Damage component that occurs the instant the ability is cast, like the direct damage above but not mitigated by enemy armor.

A series of Bleed Ticks spaced within a window of time. The first ‘space,’ the instant the bleed is cast, has no tick.

Each bleed has a baseline tick rate. A typical bleed with a direct damage component and 5 ticks in 15 seconds would have this structure over time:

| | | | | | |
|----------------------|-------------|-------------|-------------|-------------|-------------|
| 0 seconds | 3 seconds | 6 seconds | 9 seconds | 12 seconds | 15 seconds |
| Direct Damage | Tick | Tick | Tick | Tick | Tick |

Haste reduces the time between bleed ticks and adds new ones. At 100% haste, bleeds tick twice as fast and have twice as many ticks. The percentages of haste at which new ticks are added are called breakpoints and depend on the baseline number of ticks. For example, our sample bleed has five ticks so the first few breakpoints are at just above 0%, 20%, 40%, 60%, and 80%.

New ticks remain at the end of the bleed. In order to prevent the bleed from jumping massively in power each time a tick is added, the new tick does damage scaling with the proportion of haste exceeding the previous breakpoint but before the next one. As haste increases, this tick reaches full power and then becomes a standard part of the bleed at the next breakpoint when new tick is added.

If we had 10% haste, our example bleed would tick as follows, with the first five ticks spaced 2.73 ($3 / 1.1$) seconds apart, and the final tick at exactly 15 seconds and at half strength since 10% is halfway to the next breakpoint:

| | | | | | | |
|----------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 0 seconds | 2.73 seconds | 5.45 seconds | 8.18 seconds | 10.91 seconds | 13.64 seconds | 15 seconds |
| Direct Damage | Full Tick | Full Tick | Full Tick | Full Tick | Full Tick | Half Tick |

Number of Ticks = Baseline Number of Ticks \times Haste.

Damage done by individual ticks = Sum Tick Damage / Number of Ticks.

Pandemic. When a bleed is renewed before it runs out, its remaining duration (up to 30% of its base length), is added to the new application. Thus, the renewal of a 15 second bleed at 3 seconds before its expiration gives a new bleed with an 18 second duration; and a 15 second bleed renewed at 10 seconds remaining gives a new bleed with a 19.5 second duration ($15 * 0.3 + 15$ seconds).

Some damage multipliers may be stored in the game on a per tick basis, but for the purposes of this document damage multipliers for bleeds indicate the sum of all tick damage; this is then apportioned between individual ticks.

Rip

30 Energy. A bleed that consumes combo points and has no direct damage component.

Baseline Tick Rate: 12 ticks in 24 seconds.

Affected by:

- × 0.372 (0.031 × 12) Sum Tick Damage Multiplier
- × Combo Points consumed
- + (Damage on Trait) Azerite Power - Gushing Lacerations

Total Damage:

$$((\text{Attack Power} \times \text{Damage Multiplier}) + \text{Azerite Trait Damage}) \times \text{Feral Aura} \times \text{Versatility} \times \text{Mastery} \times \text{Haste} \times \text{Combo Points Consumed}$$

Rake

35 Energy. A bleed that gives a combo point when cast.

Baseline Tick Rate: 5 ticks in 15 seconds.

Affected by:

- × 0.18225 Direct Damage Multiplier
 - × 0.77805 Sum Tick Damage Multiplier
 - + (Damage on Trait) Azerite Power - Blood Mist
- When cast from stealth (or under Incarnation) hits twice as hard.

Direct Damage:

$$\text{Attack Power} \times \text{Direct Damage Multiplier} \times \text{Feral Aura} \times \text{Versatility} \times \text{Mastery}$$

Sum Tick Damage:

$$((\text{Attack Power} \times \text{Sum Tick Damage Multiplier}) + \text{Azerite Trait Damage}) \times \text{Feral Aura} \times \text{Versatility} \times \text{Mastery} \times \text{Haste}$$

Thrash

40 Energy. A bleed that gives a combo point when cast; hits all enemies within 8 yards.

Baseline Tick Rate: 5 ticks in 15 seconds.

Affected by:

- × 0.067 Direct Damage Multiplier
- × 0.2 Sum Tick Damage Multiplier

Direct Damage:

Attack Power × Direct Damage Multiplier × Feral Aura × Versatility × Mastery

Sum Tick Damage:

Attack Power × Sum Tick Damage Multiplier × Feral Aura × Versatility × Mastery × Haste

Moonfire

30 Energy. A damage-over-time spell that gives a combo point when cast; range 40 yards.

Baseline Tick Rate: 7 ticks in 14 seconds

Affected by:

- × 0.15 Direct Damage Multiplier
- × 0.84 (0.12 × 7) Sum Tick Damage Multiplier
- + (Damage on Trait) Azerite Trait - Power of the Moon
- Moonfire is technically not considered a bleed and is therefore not modified by Mastery

Direct Damage:

((Attack Power × Direct Damage Multiplier) + Azerite Trait Damage) × Feral Aura × Versatility

Sum Tick Damage:

Attack Power × Sum Tick Damage Multiplier × Feral Aura × Versatility × Haste

Feral Frenzy

25 Energy. Applies five direct damage strikes and a bleed to the target. Gives combo points.

Affected by:

× 0.25 Sum Direct Damage Multiplier (0.05 * 5)

× 1.5 (ish) Sum Tick Damage Multiplier

This ability does not do the same amount of damage as its tooltip indicates. One Feral described it as “spaghetti code.”

This ability applies Five direct damage strikes over the course of about a second.

The player must stay within melee range and face the target during this time for the strikes to hit.

Each strike that lands provides a combo point.

Sum Direct Damage:

Attack Power × Sum Direct Damage Multiplier × Feral Aura × Versatility × Mastery × Enemy Armor

The ability simultaneously applies a bleed:

Baseline Tick Rate: 4 ticks in 6 seconds.

Sum Tick Damage:

Attack Power × Sum Tick Damage Multiplier × Feral Aura × Versatility × Mastery × Haste

Feedback

If you find errors or have other feedback, feel free to ping or message me on discord (Find me in Dreamgrove, Firnaft#2199) or on reddit (u/Fearful_Leader).